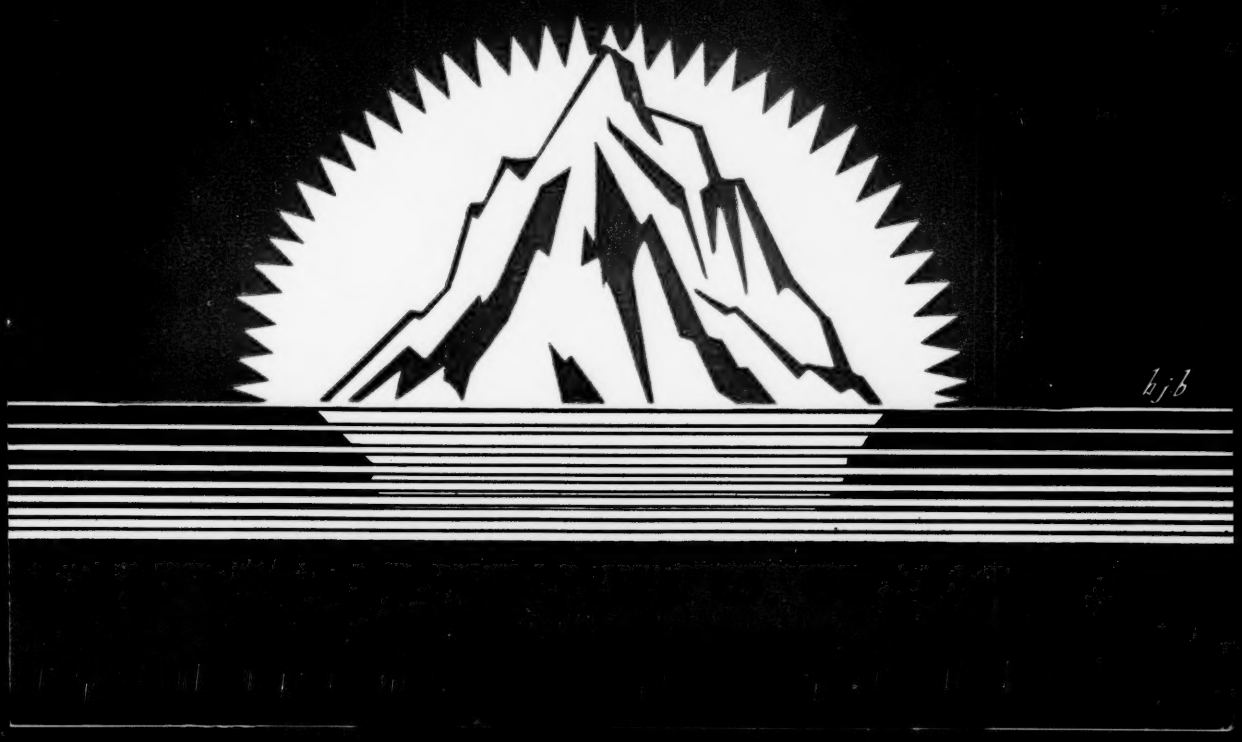
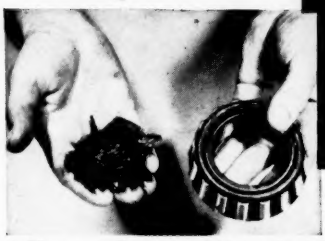
ICE AND Refrigeration



How to pack a wheel bearing and

...REDUCE MAINTENANCE COSTS with TEXACO MARFAK HEAVY DUTY



1. Place a *small amount* of *Texaco Marfak Heavy Duty* on fingers of one hand. Hold bearing (cleaned with kerosine, and thoroughly dried) as shown – small diameter facing out.

2. Turn bearing over (so large diameter faces out) into hand holding *Marfak Heavy Duty*. Work lubricant into spaces between rollers by kneading with fingers until it comes through on small diameter side.

3. Small diameter side of bearing, showing how *Marfak Heavy Duty* has been worked all the way through spaces between rollers. Repeat working-in operation around bearing until all spaces between rollers are packed.

4. All spaces between rollers have now been packed. Always work in steps, using small amount of *Marfak Heavy Duty* each time. Too much will cover bearing, prevent telling when grease is worked in properly.

5. Hold bearing as shown and spread additional *Marfak Heavy Duty* around the outside. Use enough to cover the tops of rollers with about 1/8-inch of lubricant. Spread evenly and smoothly.

6. Here is a bearing properly packed with *Texaco Marfak Heavy Duty*. Such a bearing will have full protection during the scheduled repacking intervals, plus many thousands of miles of additional bearing life.

TEXACO MARFAK HEAVY DUTY provides fluid lubrication inside wheel bearings but retains its original consistency at the edges. Thus, it seals itself in, seals out dirt and moisture, protects against rust. Safer braking is assured, and bearings last far longer. No seasonal change is required.

In chassis bearings, use *Texaco Marfak*. Even the roughest service won't pound or squeeze it out. It protects against wear and rust for extra hundreds of miles. Chassis parts last longer, maintenance costs are reduced.

For lower *engine* maintenance costs, lubricate with *Texaco D-303 Motor Oil*. It is fully detergent and dispersive, keeps engines clean – thus reduces wear, assures better performance and longer life for all engine parts.

Let a Texaco Lubrication Engineer help you reduce your automotive maintenance costs. Call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd St., New York 17, N. Y.

MORE THAN 350 MILLION POUNDS OF MARFAK HAVE BEEN SOLD!

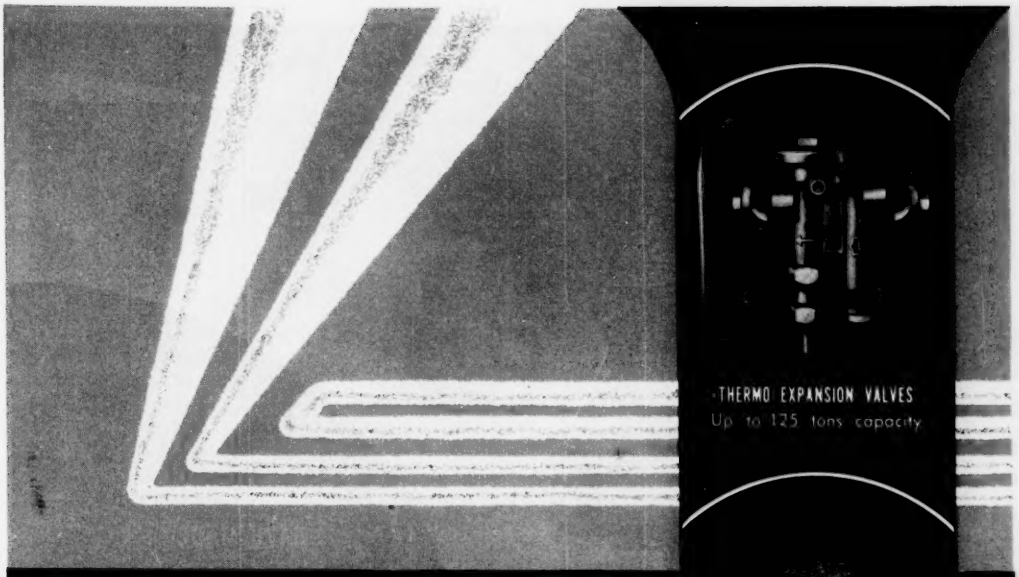
TEXACO

TEXACO Lubricants and Fuels

FOR ALL TRUCKING EQUIPMENT

TUNE IN . . . TEXACO presents **MILTON BERLE** on television every Tuesday night. **METROPOLITAN OPERA** radio broadcasts every Saturday afternoon.

ICE AND REFRIGERATION, Vol. 118, No. 3. Published monthly at 433 N. Waller Ave., Chicago, Ill., U.S.A., by Nickerson & Collins Co. Yearly subscription in the U. S., $3.00 per year; other countries, $4.00. Single copies, 35 cents. Copyrighted 1950 by Nickerson & Collins Co. Entered as second-class matter August 8, 1891, Chicago, Ill., under the Act of March 3, 1879. Additional entry at Beloit, Wisc.



THERMO EXPANSION VALVES
Up to 125 tons capacity

THE AMMONIA BRANCH OF THE ALCO FAMILY

SOLENOID VALVES
Liquid: 10 to 172 tons;
Suction: 2.7 to 28 tons

- **Thermo Valves—**

Rugged come-apart construction—few moving parts. Suitable for use on any type of evaporator whether bare pipe coils, blower coils, or chiller.

- **Solenoid Valves—**

Flanged semi-steel bodies. Heavy duty coils designed for continuous operation. Use these valves wherever positive stop service is required.

- **Evaporator Pressure Regulators—**

Pilot operated for high sensitivity. Simple cage construction. Designed to give close control of evaporator pressures on installations such as cold storage rooms, chill rooms, water chillers, etc.

For more details, write for Bulletin on Ammonia.

EVAPORATOR PRESSURE REGULATORS
3½ to 200 tons

25 ALCO

A QUARTER-CENTURY
OF PIONEERING AND PROGRESS

Designers and Manufacturers of Thermostatic Expansion Valves; Evaporator Pressure Regulators; Solenoid Valves; Float Valves; Float Switches.

4275

ALCO HAS REFRIGERATION UNDER CONTROL

ALCO VALVE CO.

835 KINGSLAND AVE. • ST. LOUIS 5, MO.

Relief Valve
Size range: ⅜" thru 2"
Screwed Bonnet Shut-Off Valve
Size range: Globe and Angle, ¼" thru 1"; Tees, ⅜" thru 1"
Bolted Bonnet Shut-Off Valve
Size range: Globe and Angle, 1¼" thru 2"
Check Valve
With or without seat lift. Size range: ½" thru 2"
Flanged Shut-Off Valve
Size range: Globe, 1¼" thru 4"
Three Way Dual Shut-Off Valve
Size range: ½" thru 1", capped and handwheel types
Expansion Valve
Size range: Globe and Angle, ¼" thru 1"
Liquid Level Gauge
Forged Steel
Size range: ⅜" and ½"
FIELD PROVEN FEATURES
HAVE MADE
HENRY AMMONIA VALVES
THE MOST POPULAR LINE
IN THE
REFRIGERATION INDUSTRY
HENRY VALVE CO.
CONTROLLING FLOW
SINCE 1914
See Your Jobber —
Write for Catalog
VALVES • ORIFICES • STRAINERS • CONTROL DEVICES and ACCESSORIES FOR REFRIGERATION and AIR CONDITIONING and INDUSTRIAL APPLICATIONS
HENRY VALVE COMPANY
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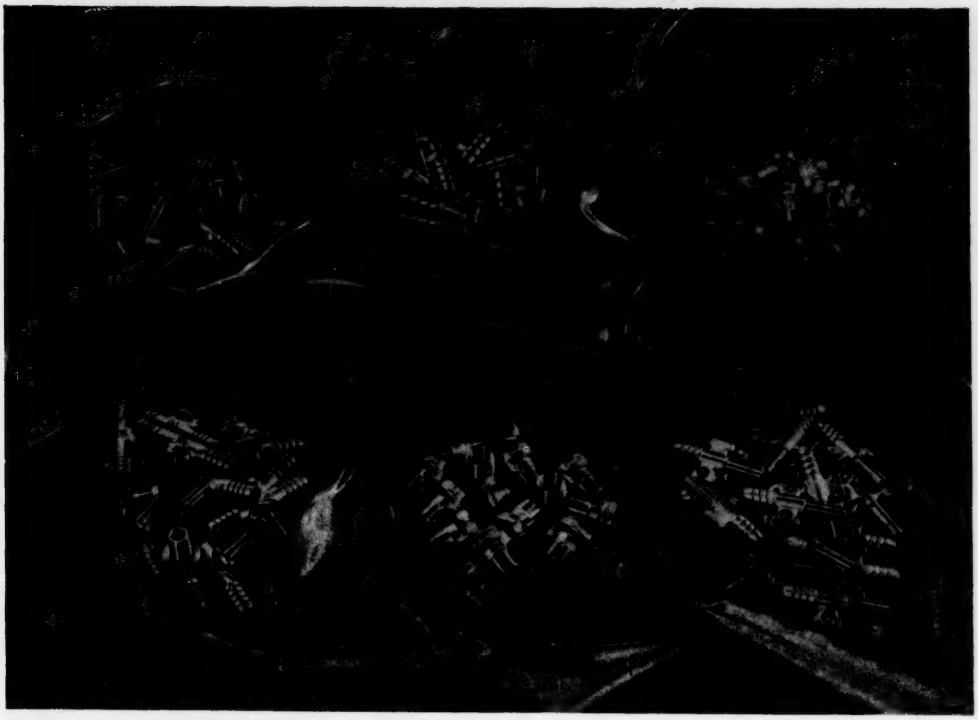
Martocello QUALITY



OUR PRODUCTS ARE MANUFACTURED FROM THE FINEST MATERIALS AND DESIGNED TO GIVE LONGER AND MORE EFFICIENT OPERATION

compare their **QUALITY** *and* **WORKMANSHIP** *with all others and satisfy yourself that they are the very best*

COMPLETE AIR AGITATION SYSTEMS AND ICE PLANTS

"HELPFUL SUGGESTIONS"

When an ice block has been frozen until the last three or four quarts, pump out the core water. Do this with the flattened Core Sucker connected with a hose to a Core Pump. It is only necessary to insert the Core Sucker tube into the core cavity containing impure water, and the Core Pump withdraws the liquid to be thrown away. Always wash out this core with the Core Filler water. Then remove the Core Sucker and pass it on to the next can and refill the cavity with fresh water, using the Core Filler. Pumping out core earlier than necessary considerably retards freezing. Always wash with the Automatic Core Filler, moving it about the top of the block as the Core Sucker tube withdraws the dirty water. After cores have been pumped on Low Pressure Can Basket installations, reduce the air volume by turning the Controlling Valve handle to a vertical position. This will also assure level blocks of ice.

REPRESENTED ON THE WEST COAST BY WESTERN ICE EQUIPMENT CO., 420 MARKET ST., SAN FRANCISCO, CALIF.

JOS. A. MARTOCELLO & CO.

229-231 North 13th Street **Philadelphia, 7, Pa.**

What's so "New" about the New 1950 York V/W Ammonia Compressor?

IT CAN'T WEAR OUT!

FOR A FACT, you can't wear out a 1950 York V/W Ammonia Compressor! And the reason is simple: *Every part subject to wear is renewable!*

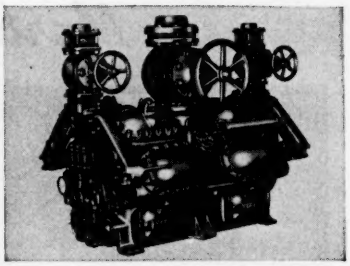
All you do is slip out the worn part, and slip in a new one. Not a "special" repair part oversized, for instance, to compensate for machining, but an identical component, resulting in new-machine efficiency, with all parts still standard in size —and all parts still renewable with standard replacements.

In addition, the parts of all York V/W Ammonia Compressors—for high-stage or booster operation—are interchangeable, cutting down stock-piling of spare parts.

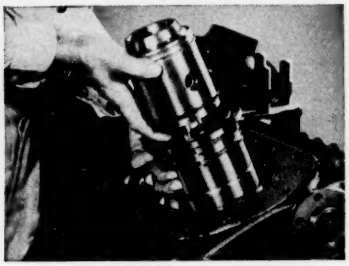
Simplicity of design, speed-and-ease of repair *pay off* in preventing production losses if shut-downs should occur. In less than four hours, even the large capacity 16-cylinder "V/W" can be completely rebuilt by one man.

For industrial or processing refrigeration, the new 1950 York V/W Ammonia Compressor—4, 6, 8, 12 and 16-cylinder —has built-in flexible capacities that make it universal in application . . . operates with any type of prime mover, including steam turbine, permitting use of low pressure or waste steam.

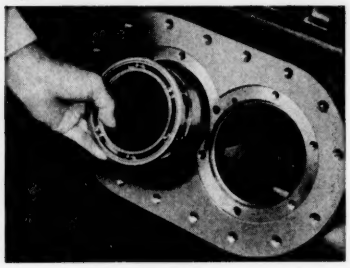
Let your nearest York Representative match his time with yours to discover *where* and *how* the 1950 York V/W Ammonia Compressor can save you money . . . improve your product. No obligation, of course. York Corporation, York, Penna.



Pistons are pulled with simple hand tools. No heavy chain blocks, or back-breaking, time-consuming labor.



The cylinder walls are hand-removable liners. Smooth, durable, high-polished, offer long, efficient service.



BE SURE YOU GET THESE YORK EXTRAS IN YOUR NEXT AMMONIA COMPRESSOR!

1. LOW INITIAL COST.
2. LOW OPERATING COST.
3. LOW MAINTENANCE COST.
4. SPACE-SAVING COMPACTNESS.
5. SIMPLIFIED MOTORS & STARTING CONTROLS.
6. VIBRATION-FREE OPERATION.
7. FILTERED LUBRICATION.
8. POSITIVE LUBRICATION.
9. POSITIVE SHAFT SEAL.
10. BOOSTER AND/OR HIGH-STAGE OPERATION.
11. COMPLETE NEW LINE.

York refrigeration air-conditioning

PIONEERS IN INVENTION AND DEVELOPMENT SINCE 1874

Refrigeration and Air Conditioning

OUR BUSINESS IS IMPROVING YOUR BUSINESS

A NEW REFRIGERATION CONDENSERS BOOKLET BY Vogt

Here's pertinent, up-to-the-minute information on our complete line of refrigeration condensers . . . a 24 page booklet showing types and sizes designed to deliver low temperature liquid with the lowest condensing pressure.

Vogt Refrigeration Condensers are fabricated from top quality plates, tubes, pipes, forgings, and castings by skilled workmen in modernly equipped shops. Units are designed, tested and stamped to A.S.M.E. Code requirements.

Vogt
FOR BETTER REFRIGERATION

HENRY VOGT MACHINE CO., LOUISVILLE 10, KY.

BRANCH OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO, ST. LOUIS, DALLAS

The *DEMAND* Is for QUALITY ICE

For Ice That Will Not Produce Slime In Ice Boxes...

Use DISTILEX This Way...

Dispense with Soda Ash, Sodium Aluminate, Alum and Similar Products . . . and

SIMPLY MIX DISTILEX WITH THE LIME YOU ARE NOW USING!

Block on left treated with Distilex, only one core emptied. Right, untreated water, cores were emptied twice. Most Distilex users do not empty cores at all.

***RESULT** . . . .* High-grade Crystal Ice from raw water . . . Ice free from slime and deposits . . . Ice without color, odor, taste . . . Ice which can be produced at very low temperature* with no cracking while being frozen, dumped or cut.

***DISTILEX** treated water can make Ice in LESS THAN 25 HOURS at 10° brine temperature!*

Test DISTILEX in your plant. If not entirely satisfied, purchase price will be refunded on all DISTILEX returned. $25.00 per 100 lbs., f.o.b. Birmingham.

Use SOLVEX for COMPRESSOR COOLING SYSTEMS

HIGH HEAD PRESSURES QUICKLY LOWERED with this remarkable chemical. SOLVEX can be quickly applied without breaking a joint. REMOVES RUST, SCALE, ALGAE, OIL AND ENCRUSTING MATTER from condenser tubes and water jackets in one to five days operation. Ideal for cleaning scale and corrosion from boilers, heaters and tanks.

An effective conditioner for spray ponds and cooling towers. SOLVEX goes to work immediately WITHOUT COSTLY SHUTDOWNS. Cooling efficiency is rapidly restored by using one pound per 10 gallons of water.

Write NOW for Further Particulars on These MONEY-SAVING AIDS TO BETTER ICE MAKING!

The CSCO STABLEIZER MAINTAINS GOOD BRINE by a positive reaction to either OVER-ACIDITY or OVER-ALKALINITY!

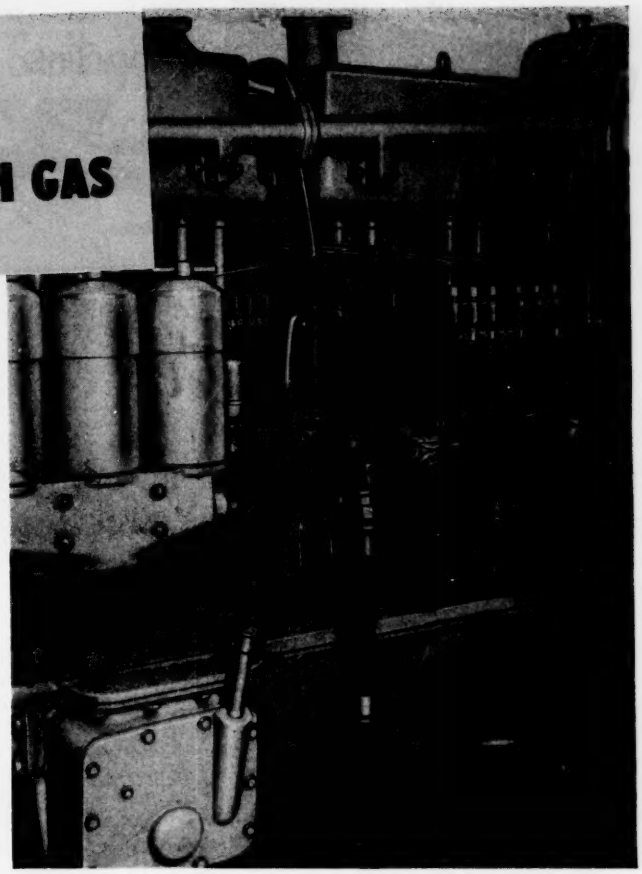
A scientific combination of pure metals upon which damaging materials in brine will "feed" in preference to the brine tank or ice cans, thereby SAVING them!

the CSCO STABLEIZER removes destructive material from the brine without adding harmful chemicals. Easily installed in all systems. No other brine treatment compares in SAFETY! The STABLEIZER does not make brine harmful to workmen's hands. PROTECTS AND PRESERVES EXPENSIVE EQUIPMENT!

CHEMICAL SOLVENT COMPANY

3005—16th Street North — Birmingham, Ala.

THEY'RE "COOKING" WITH GAS



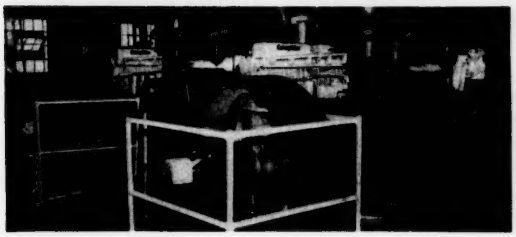
THESE "Cat" D13000 Engines, making ice at the Valley Ice Company plant in Lincoln, Nebraska, are operating on 90% natural gas to step up profits for the owner. All D13000 "Caterpillar" power packages can be equipped with the Dual-Fuel attachment for sweeping economy where natural gas is available. The fuel injection pumps and gas governor control assembly give them outstanding lugging ability, a wide range of operating speeds, and enable them to take sudden, heavy loads without faltering.

The superior performance and longer life of all "Cat" Diesels stem from such parts refinements as drop-forged crankshafts, with rifle-drilled lube oil passages from bearing to bearing and "Hi-Electro" hardened to give more life to wearing surfaces. Quality throughout is built into these big, yellow power packages.

Why not see your nearby "Caterpillar" dealer today for a demonstration. He has a full line of "Caterpillar" Diesel Engines and Diesel Electric Sets, each built to deliver dependable power for thousands of trouble-free hours.

CATERPILLAR TRACTOR CO., PEORIA, ILL.

Parts of the Dual-Fuel attachment shown include incoming natural gas piping, pressure regulator and the governor and Diesel fuel injection pump group which gives the unit its exceptional capacity to handle varying loads. In emergencies, up to 80 hp. can be obtained by direct switch-over from Dual-Fuel operations to full Diesel, *without changing a single part!*



These two "Cat" D13000 Engines have been equipped with Dual-Fuel attachment to cut operating costs of the Valley Ice Company at Lincoln, Nebraska, where inexpensive natural gas is available.

CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

CATERPILLAR TRACTOR CO., Box IR-3, Peoria, Illinois

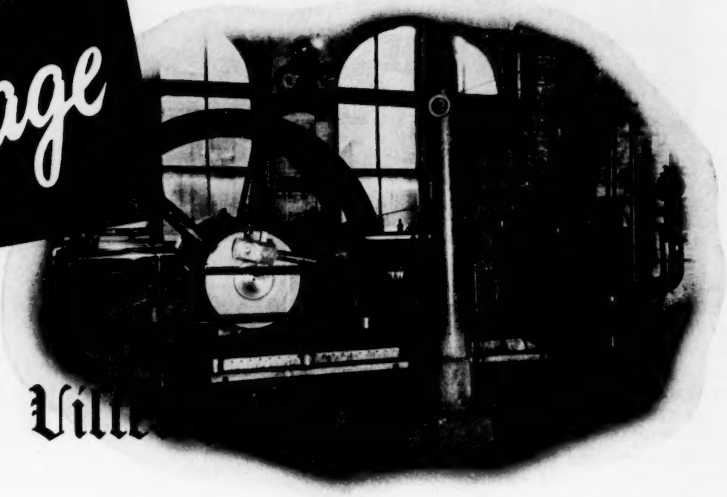
Please send me your latest booklet, "Refrigeration Assured."

Name _____

Address _____

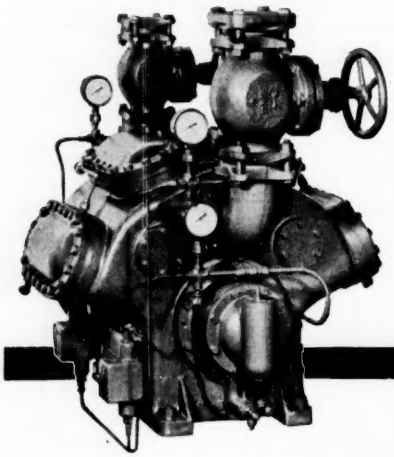
THIS IS

Heritage



1887 Vilt

1950



In 1887—63 years ago—this Vilter-built Slide Valve Engine and Horizontal Ammonia Compressor combination was installed at the Adam Gettelman Brewing Company in Milwaukee. It's *still being used today* in 1950. This is striking evidence of what sound construction—and care in operation—can do.

More than that, it's a picture of the background behind today's up-to-the-minute Vilter Compressors. That background of engineering and research in refrigeration, of craftsmanship and highest standards in manufacture gives every Vilter Compressor a *heritage* that is priceless.

Today, as in 1887, Vilter builds refrigeration equipment to *keep running*. The shop methods are different, with faster, modern machine tools and plant equipment. But there's still the same painstaking craftsmanship that grew up with Vilter. The design is different, too—witness the modern high-speed, lightweight, compact unit which requires but a fraction of the floor space occupied by the horizontal compressor—but the Vilter heritage of long, efficient life remains unchanged.

Vilter

REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY
MILWAUKEE 7, WISCONSIN

Ammonia and Freon Compressors • Pak Icers • Evaporative and Shell and Tube Condensers • Pipe Coils • Valves and Fittings

As a Sanitary Safeguard the New Haven R.R. uses Packaged Processed Ice!

A new diner of the New York, New Haven & Hartford. This railroad ices forty cars daily—diners, grill cars, lounge cars—with processed ice in Union one-trip paper ice bags.

Here's an Easy Way to Sell the Big Users of Processed Ice

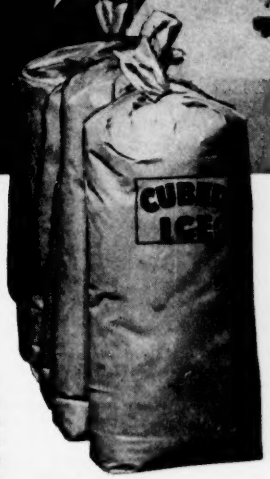
THE BIG PROFITS come from users of processed ice who order in quantity.

How can you sell them? Do as many other ice companies are doing. Talk about your sanitary safeguards and demonstrate the superior features of Union one-trip paper ice bags.

Show your prospect how the wire tie on the one-trip ice bag locks out dirt, bars pilferage and spillage. Demonstrate how the double layer of wet strength paper retards melting. Explain why icing from a handy paper bag and eliminating reusable containers cuts labor costs down.

It's easy to see how one-trip paper bags save you money, too! They speed up handling at the ice processor, loading platform and in delivery. Customers do their own icing, using more ice and saving drivers' time.

You win on sales and lower costs. So you have everything to win and nothing to lose by switching to Union one-trip paper ice bags today! Write for samples.



Wet-Strength Paper Ice Bags have tremendous strength even when soaking wet...thanks to a water repellent resin that binds the fibres of the paper firmly together.

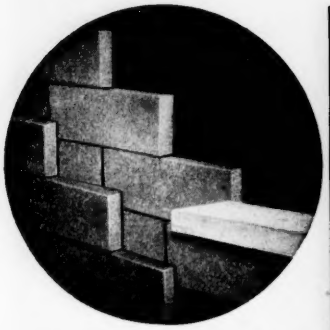
ONE TRIP

UNION Paper Ice Bags

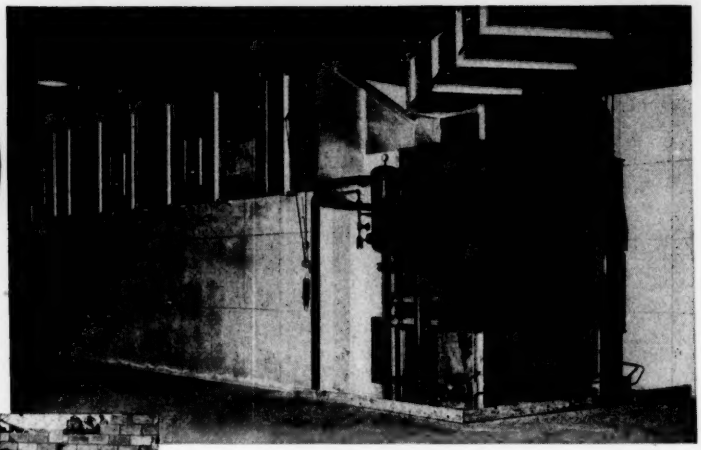
A product of the UNION BAG & PAPER CORPORATION • Woolworth Bldg., New York 7, N. Y.

Bags of Kraft, Transparent Films, Waxed Paper, Glassine, Laminates

MUNDET CORKBOARD PROTECTS *Quick Frozen* CITRUS CONCENTRATES



Progress picture shows alternating layers of corkboard being applied to wall of freezer storage.



Mundet Corkboard insulates this freezer storage room in new plant addition of Plymouth Citrus Growers Association, Plymouth, Florida.

Above: Mundet Corkboard is being applied to roof over freezer tunnel in modern plant of Polk Packing Association, Winter Haven, Florida. The carefully guarded quality of Polk Packing insures the fame and appeal of frozen concentrates.

THE fast growing demand for frozen orange juice concentrates has caused Plymouth to enlarge its quick freezing plant. Mundet Corkboard is chosen to protect the delicious flavor and freshness of Plymouth-frozen juices, with installation in additional freezer storage and extension to freezer tunnel • • • View above shows refrigeration blast unit and section of duct that delivers air from refrigerating equipment to tunnel and from there to storage room. Special construction permits utilization of air from tunnel with resulting economies.

Mundet Corkboard for both of the installations shown here was supplied thru our Atlanta office. Convenient Mundet branches in many cities are staffed with competent specialists, ready to give money-saving services to packers, food processors and other users of low temperature. Write for details to Mundet Cork Corporation, Insulation Division, 7101 Tonnelle Avenue, North Bergen, N. J.

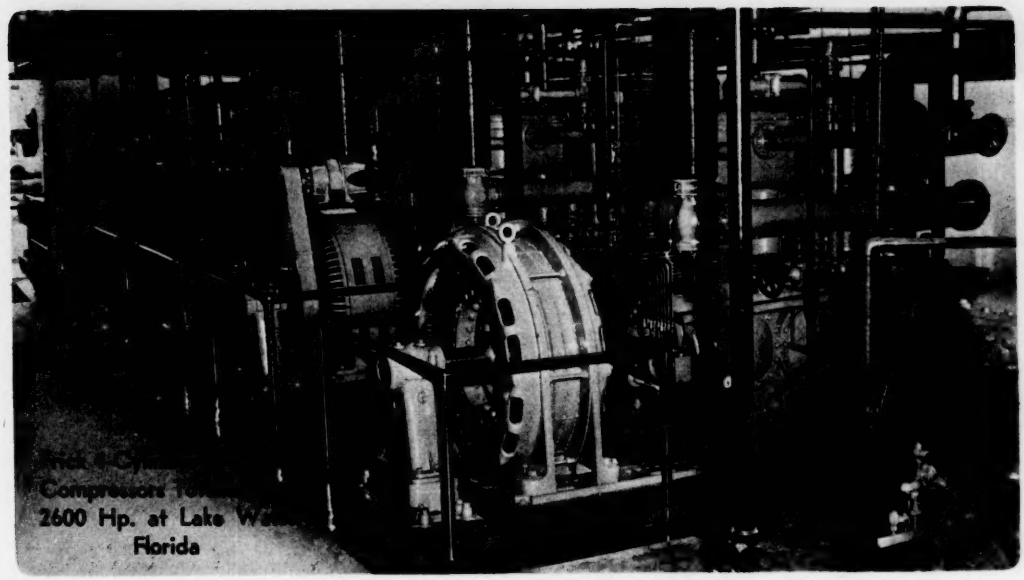
MUNDET
CORK INSULATION

ATLANTA: 339-41 Elizabeth Street, N.E.
BOSTON: 57 Regent St., North Cambridge 40
CHARLOTTE, N. C.: 206 E. Stonewall St.
CHICAGO 16: 2601 Cottage Grove Avenue
CINCINNATI 2: 427 West 4th Street
DALLAS 1: 601 Second Avenue
DETROIT 21: 14401 Prairie Street

Mundet district offices are located in these cities:

HOUSTON 1: Commerce and Palmer Streets
INDIANAPOLIS: 15 E. Washington Street
JACKSONVILLE 6, FLA.: 800 E. Bay Street
KANSAS CITY 7, MO.: 1428 St. Louis Avenue
LOS ANGELES (Maywood): 6116 Walker Ave.
NEW ORLEANS 16: 315-25 N. Front Street
PHILADELPHIA 39: 856 N. 48th Street
ST. LOUIS 4: 2415 South Third Street
SAN FRANCISCO 7: 440 Brannan Street
In Canada: Mundet Cork & Insulation, Ltd. 35 Booth Avenue, Toronto

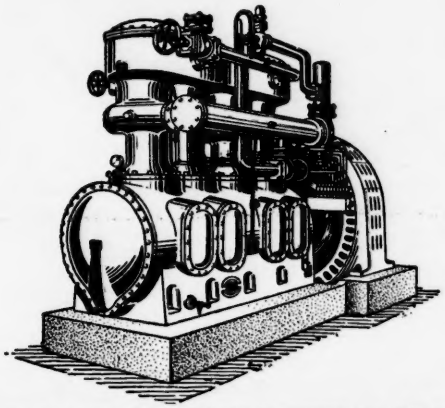
Write us for name of our nearest representative if there is no Mundet office in your city.



2600 Hp. at Lake W
Florida

Orange Juice Concentrating Plant Now Uses 3180 Horsepower of Frick Refrigeration

The Florida Citrus Canners Cooperative at Lake Wales, largest of its kind in the world, depends on this battery of six Frick refrigerating machines for heavy-duty heat-pump service.



Standard Large Frick 4-Cylinder Compressors Are Built in Sizes from 10" by 10" to 14" by 12". For Booster Service, Sizes Range from 15" by 10" to 17¾" by 12".

Hot gas, discharged from the compressors, heats the orange juice, driving off excess moisture as low-pressure steam. This is condensed by the "cold" side of the refrigerating system, and the heat is efficiently recovered.

Nine other Frick compressors chill, quick-freeze, and store the concentrated juices. The original capacity of the plant has increased nearly six times over, in two years.

Frick equipment was the pioneer and is the recognized leader in this new field. Whether you need air conditioning, ice-making or refrigerating equipment, you get the most satisfaction and economy from machinery carrying the Frick trademark. Let us submit estimates on your requirements.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

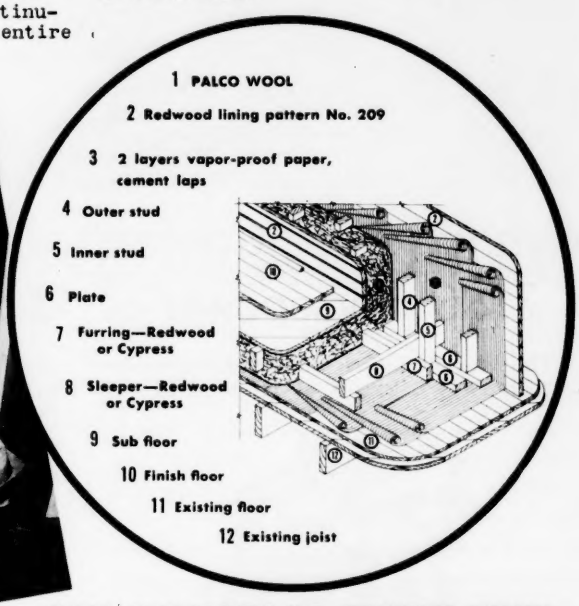
WAYNESBORO, PENNA. U.S.A.

INSTALLATION FILE NO. 1003

How to get maximum efficiency with PALCO INSULATION WOOL

Recommended

FREEZER CONSTRUCTION FOR FRAME BUILDING—Note how solid wood connection is reduced to minimum by staggered arrangement of studding, joists, and sleepers. Similar construction is used on ceiling. This provides virtually continuous PALCO WOOL Insulation around entire room. Vapor barrier should be applied on warm side only, continuous over existing floor, wall and ceiling. It should consist of two layers of vapor-proof paper with 4-inch laps cemented with asphalt emulsion. No vapor barrier should be used on cold side.



Applied

FROZEN FOOD LOCKERS, INC., FRANKFORT, INDIANA—Photograph illustrates how proper construction minimizes through contact of wood members. This assures maximum advantages from high efficiency of PALCO WOOL Insulation, which has thermal conductivity of only .255 B.t.u. It's flameproofed, moisture resistant, odor proof...ideal for all food storage.

NATURE'S INSULATION FROM AGE-OLD REDWOOD BARK
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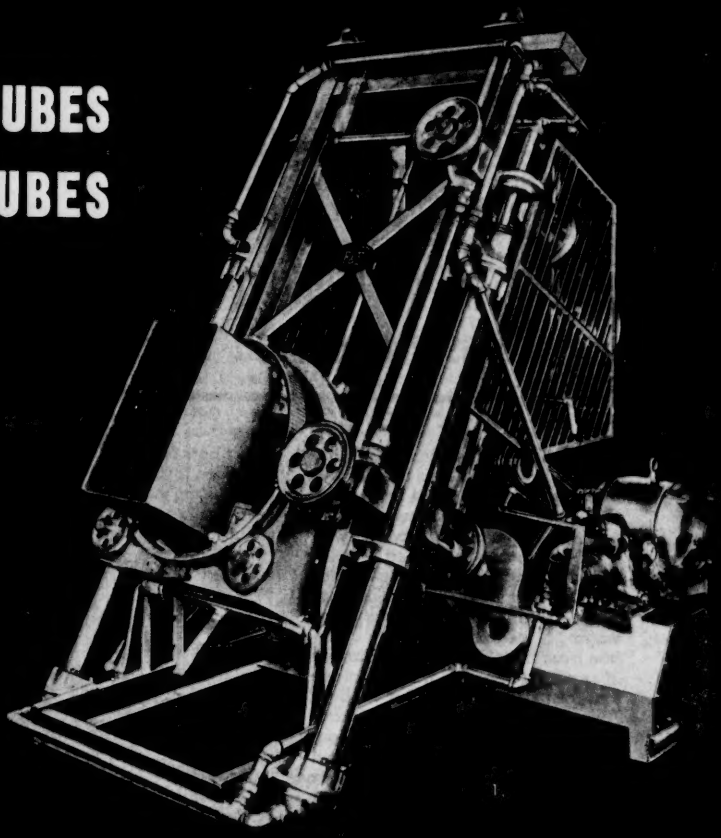

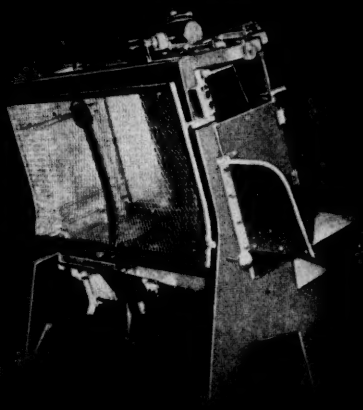

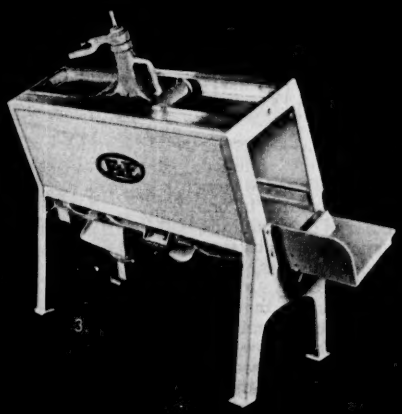

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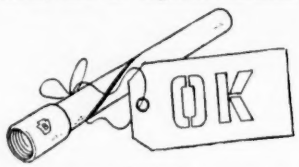

has been certified by service records of 50 years or more. In one study of a number of old buildings, wrought iron vents were still serving in one building after 49 years —in two after 48 years . . . and in three others after more than 45 years. In contrast, in a group of eleven buildings where low-first-cost materials had been used for vents, the life *to failure* averaged less than 23 years. In another study of a group of buildings over 20 years old, the engineer estimated the depreciation as 20% for the wrought iron vents, and 90% for the other material. Similar impressive performance figures support the choice of wrought iron for waste lines.

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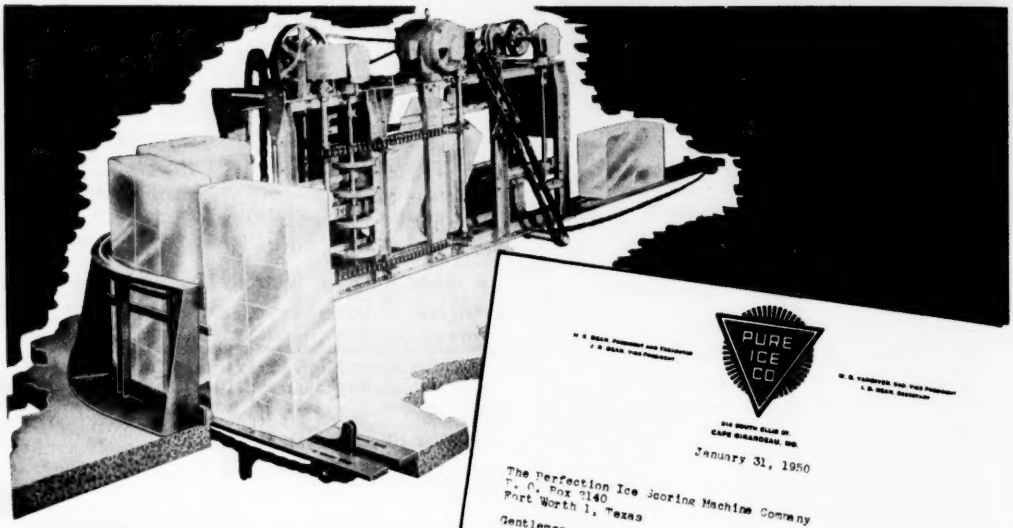

READ WHAT A WELL-KNOWN AND PROMINENT ICE MANUFACTURER HAS TO SAY ABOUT PERFECTION EQUIPMENT . . .

Reproduced here is a letter recently received from Mr. J. R. Dean, Vice-President, Pure Ice Company of Cape Girardeau, Missouri. Mr. Dean is a prominent and progressive Ice Manufacturer, having recently been re-elected President of the Missouri Ice Manufacturers Association.

PURE ICE CO

January 31, 1950

The Perfection Ice Scoring Machine Company
P. O. Box 2140
Fort Worth 1, Texas

Gentlemen:

Our experience with using your Perfection Ice Scoring Machines and our dealings with your company have been very satisfactory. When we built our present plant in 1936, we purchased on April 5, 1936, one of your 300-pound Perfection Regular Ice Scoring Machines. This machine was placed in our storage room and has been in constant use since it was installed. We have of course, during this time, replaced some minor parts, but today the machine is in perfect working condition. It is gratifying to us to know that even though the machine is 24 years old, any part on it is still available from your company for immediate shipment.

In 1948 when we enlarged the capacity of the above mentioned plant to replace the tonnage from another plant which we abandoned due to flood waters, we purchased another of your scoring machines. This machine was the 300-pound Perfection Special Conveyor Type Scoring Machine. We are very well pleased with the operation of this unit and the special conveyors which you designed to be used in connection with it.

This machine eliminated all manual labor in connection with the handling of the blocks of ice from the time they are dumped from the cans until they are in the storage room and standing on end. As you know, the blocks of ice slide from the can dump on to a double chain conveyor which automatically feeds the blocks on to the feed conveyor of the Perfection Special Conveyor Scoring Machine. The scoring machine scores and up-ends the blocks and discharges them on to a conveyor which delivers them up-ended into the storage room.

We would certainly not hesitate to recommend your machine or your helpful engineering service to anyone.

Very truly yours,
PURE ICE COMPANY
J. R. Dean

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We urge Ice Manufacturers who have Perfection Equipment to anticipate their needs and order parts required—early!

Repair parts on all current models of Perfection Machines are available for immediate shipment.

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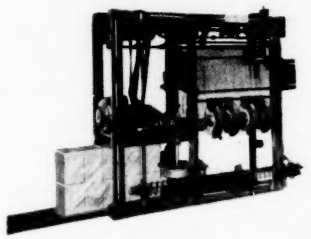
A Portable Machine

Capacity 6 Blocks Per Minute



IN THIS ISSUE —

American Warehousemen Hold Annual Meeting

The 59th annual meeting of the American Warehousemen's Association was held in Chicago, January 30 to February 1. The grand total of nearly 600 warehousing people present set a near record attendance. The meeting also set a high mark of sustained interest and practical information. The National Association of Refrigerated Warehouses meeting in conjunction with A.W.A. presented six regular sessions and two breakfast sessions, aside from various committee meetings, each of which was sparked with interesting presentations and impromptu discussions of various industry problems. Reports of these two meetings start on pages 19 and 23.

Refrigeration Research Foundation Meeting

The sixth annual meeting of the Refrigeration Research Foundation was held in Chicago, January 26 to 28, starting with an all-day meeting of the Scientific Advisory Council and continuing with a council and membership meeting and a membership and business meeting. Current research projects were reviewed, new officers were elected and an outline of future work was presented. For report of this meeting see article starting on page 29.

Pressure Relief Devices and Methods

High pressure cut-outs, relief valves, rupture discs are commonly supposed to insure against blow-up of receivers, condenser and other pressure vessels. There is not much insurance provided by devices improperly installed and badly maintained. In an article on page 33, B. J. George tells what he found in a survey of refrigeration plants and follows with a discussion on proper application and use of pressure protective devices.

Fact Finding Conference

The annual fact finding conference of The Institute of American Poultry Industries was held at Kansas City, Mo., February 11-14. Of particular interest to the refrigerating industries were discussions of the efficiency of refrigerating equipment, and the use of refrigeration in poultry processing and packing. These and other subjects are summarized in a report of the meeting on page 37.

Storage of Frozen Foods

The refrigerated warehouse industry for many years has realized that the frozen foods industry is one of its big customers. It has therefore made special efforts to make it easy for both frozen food packer and frozen food distributor to do business with them. How this is being done is told in the article on page 39 by Paul B. Christensen of the Merchants Refrigerating Co., New York City.

Accident Prevention

Safety and accident prevention work is not new and it does not have the glamor of many other business activities, but it does pay off in dividends of reduced time and money saved as well as human lives and suffering. A startling fact is that from 1941 to 1945, during a war, there were fewer fatalities in the armed forces of the United States than there were in industry. The place of such work and how to make it effective was discussed in a paper at a recent N.A.P.R.E. convention, and published on page 46.

Mechanical Refrigerator Owners Use Ice

A recent survey in the ice industry shows that mechanical refrigerator owners are buying about a million tons of ice a year. This new market, it is suggested offers possibilities of greatly increased sales. The results of the survey and some of the conclusions are given in the article on page 55.

Paper Bags for Ice

Wet-strength one-trip paper bags have been on the market for some time now for packaging ice cubes and sized ice. They have many advantages. Some of their uses and features are illustrated on page 59.

Frozen Foods Industry Annual Convention

The fourth annual convention, representing all segments of the frozen foods industry, was held in Chicago, January 31 to February 3. One of the high points was an all-industry luncheon, followed by a program at the Congress Hotel, Thursday noon. Panel discussions, papers and addresses, and reports on the progress of the industry made up an interesting program. For details see report of the meeting starting on page 65.

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SIZE ICE with G-W machines

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...in elevator performance

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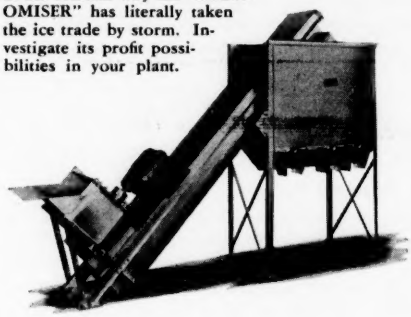
...in screening area

Rotary screens... ample in area for providing a clean, uniformly sized product.

Standard units furnished in four types. Ask a G-W representative to discuss a unit to fit your storage space, production capacity, bagging facilities. Write for Bulletin 482.

The New G-W "ECONOMISER"

Low initial cost... low operating maintenance ... high quality... a profit and good-will builder ... guaranteed without reservations... just a few of the reasons why the "ECONOMISER" has literally taken the ice trade by storm. Investigate its profit possibilities in your plant.



"ECONOMISER"—Fixed screen, perforated plate. Only two shafts. Grease-sealed bearings. Compact, low head room—7'6".

G-W ICE TOOLS — A complete line of top-quality hand-tools ... tongs, hooks, shavers, bars, chisels, etc. ... designed to make manual handling of ice easy and safe—made tough to stand the gaff for years. Write for Bulletin No. 480.

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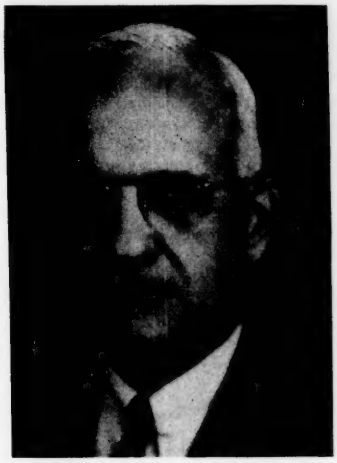
American Warehousemens Association 59th Annual Meeting

TRIMMED down to two brief sessions and one breakfast meeting to meet the restrictions imposed by crowded three-day programs of the Merchandise Division and the National Association of Refrigerated Warehouses, the American Warehousemens Association met for its 59th annual meeting at the Edgewater Beach Hotel, Chicago, January 30 to February 1. The nearly 600 warehousing people present brought the attendance up to a near record.

A pre-convention activity was a "press-brunch" Saturday noon at which officers of the association and other leading warehousemen met and were interviewed by representatives of the trade press and Chicago newspapers.



Horace W. Wilson, Philadelphia, Pa.
President
American Warehousemen's Association

For the ladies of the convention special entertainment events were provided, directed by Mrs. Arthur N. Otis for the refrigerated warehousemen and Mrs. J. Leo Cooke for the Merchandise Division. These events included a card party Monday afternoon, a luncheon and style show Tuesday afternoon, guests at the luncheon and style show Tuesday afternoon, guests at the Breakfast Club radio broadcast and later a tour of the Merchandise Mart Wednesday morning. They also accompanied the men at the luncheon Monday, the hospitality hour Monday evening, the AWA family party Tuesday evening and the President's reception and annual dinner Wednesday evening. The general convention committee was made up of Ward Castle, Albert F. Winston, Donald Bateman, S. T. Heffner and Wm. C. Baker.

Opening Session

The convention was officially opened at a special luncheon session featuring addresses by Clem D. Johnston AWA president, the Hon. Martin J. Kennelly, mayor of Chicago and the Hon. Everett M. Dirksen, formerly member of Congress from Illinois. The luncheon was held in the Marine dining room of the Edgewater Beach. President Johnston presided and introduced the officers of AWA and the two divisions.

General Officers for 1950

President, Horace Wilson, Philadelphia, Pa.
Vice-president, J. Leo Cooke, Jersey City, N. J.
Treasurer, Willard Morse, Minneapolis, Minn.

The Treasurer's report presented by Willard A. Morse of Minneapolis showed a current balance, including investments in securities, of $9,762.62.

Martin J. Kennelly, mayor of Chicago, in a brief speech welcomed the members to Chicago. Mayor Kennelly said he could do this as a warehouseman himself as well as being Mayor of the City of Chicago.

President's Address

President Johnston opened his remarks with praise for the outstanding services both merchandise and refrigerated warehousemen have rendered during the past 59 years. He outlined a bright future for warehousing and all segments of the American economy but warned that problems and challenges lay ahead. Warning that the Administration and a large portion of the people are placing "mistaken emphasis on security—to such a degree that many would in effect abandon freedom itself" to achieve it, Mr. Johnston said, "There will always be uncertainties in a dynamic economy—it is the essence of our competitive system and we should glory in it, all the while battling for improvement." Finally, the AWA president called on all industry to join in a united effort against those forces which are destroying our free enterprise system.

Clement D. Johnston, Roanoke, Va.
Retiring president
American Warehousmen's Association

With respect to the warehousing industry itself, he pointed out changes that had taken place such as better transportation and other improvements, all of which made for better and smoother operating business but, he said, there was a lot to be achieved. Illustrating the rapidity of changes, he pointed out that frozen food production had increased some 39 per cent over last year.

J. Leo Cooke, Jersey City, N. J.
Vice-president
American Warehousemen's Association

On current problems which all business men have to face, he mentioned high taxation which discourages new construction. Another is government competition in many phases of business. This is dangerous, he said, because if in the wrong hands it could easily create unfair and destructive competition. Another problem is too much reliance of the people now-a-days on the security provided by government. These problems and others, he said, will be with us but they have to be taken as part of the competitive free enterprise system which we are not willing to abandon. American industry is strong and it has the ability to examine and know facts and act on them intelligently. Those who know American business in all its phases, he concluded, are quite willing to face the future with high confidence.

Dirksen Points Warning

Mr. Dirksen, speaking on the subject, "The Next 50" also warned warehousemen that America is travelling a dangerous road. He, too, called for a reversal of socialistic and welfare trends in order to preserve our freedom and our economic system. A warehousing business, he said, is a typical part of the American business system which has been developed to provide goods when and where they are wanted and at a price people can pay.

Reviewing events of the past since 1900, he asserted that all of these showed a continuous march upward to a new sense of achievement. Regarding the future, he said that it was certain science would bring changes and this, too, will result in new achievement and better ways of living brought about by steady and constant and dramatic action of life. In all this, he said, it was important to work actively to preserve the atmosphere of freedom as contrasted to the growing trend toward atmospheres of defeatism and evasion of risk and responsibilities. Most of all, he said, America needs continuance of freedom which will be destroyed if the American people fail to stand up and work for it.

Banking Relations

The second day of the convention opened with a breakfast meeting of the A.W.A. Committee on Banking Relations. This Committee is composed of the banking committees of the two divisions—the National Association of Refrigerated Warehouses and the A.W.A. Merchandise Division. Heading the Merchandise Division Committee was Charles LaMothe of the St. Louis Terminal Warehouse Corp., and for the refrigerated warehouses, Horace W. Wilson, Quaker City Cold Storage Co. Inc., Philadelphia, Pa. The overall group consists of some 85 warehousemen representing the twelve federal reserve districts.

The meeting attracted an unusually large number of interested persons from both divisions. Present as guests were representatives of three of the leading banks of Chicago. Purpose of the meeting was to introduce and discuss distribution of a new brochure published by A.W.A. to acquaint bankers with the proper form and use of warehouse receipts.

The booklet is titled "To the Bankers of America—Warehouse Receipts Can Work for You." It is especially designed for use in the commodity loan departments of banks and explains how warehouse receipts can be used

Willard A. Morse, Minneapolis, Minn.
Treasurer
American Warehousemen's Association

as collateral to finance loans on inventories stored in public merchandise, refrigerated or field warehouses. It distinguishes between negotiable and non-negotiable warehouse receipts and points out the advantages and disadvantages of each. The booklet also calls on warehousemen and bankers to cooperate with one another for their mutual advantage. It stresses the fact that such cooperation can develop new business for both.

C. J. LaMothe explained that both public refrigerated and public merchandise warehouses are vital agencies in trade and commerce for the storage of goods awaiting processing, marketing and distribution. "The issuance of warehouse receipts," he said,, "is one of the most valuable

functions they render in contributing to the orderly functioning of America's vast distribution system."

Mr. LaMothe explained that 50,000 copies of the booklet have been printed, that it has been accepted by the American Bankers Association and the Morris Bank and these organizations will aid in distributing these booklets. A number of the warehousemen pointed out that information in this booklet regarding the procedure of handling warehouse receipts is needed by the working personnel of banks, and it was suggested that a copy of the brochure be attached to each warehouse receipt going to a bank for the information and guidance of the person in the bank handling the receipt. This it would provide a valuable tool for educating bankers as well as warehousemen. It was also suggested that a valuable means of publicizing this subject would be for warehousemen to talk at local bankers' meetings.

Closing Session

The closing general session was held Wednesday afternoon after the two Divisions had adjourned their annual meetings. Presiding was Clement D. Johnston, A.W.A. president.

Resolutions

Resolutions were presented by A. B. Efroymson, chairman of the Resolutions Committee, extending appreciation and a vote of thanks to President Johnston for his services, to Jerry P. Johnson for his work as head of the Legislative Committee and to the speakers and convention committees. Other resolutions were as follows.

WHEREAS we have complete confidence in the American system of free enterprise, and

WHEREAS it is our firm opinion that individual initiative without government interference has been the major factor in the wonderful progress of the United States, and

WHEREAS it is our firm opinion that the practice of government controls and subsidies can only eventually defeat true democracy and lead to socialism, and

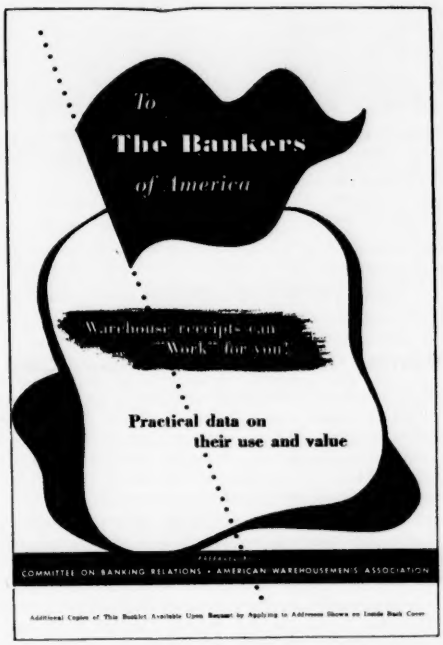
WHEREAS it is our firm opinion that the extravagances and unnecessary spending now existant in government; the heavy increased load of taxation; the exceptionally high and unwarranted cost of government; and the program of deficit spending now being practiced by government is endangering the economy and progress of our nation, therefore

Be it Resolved that the American Warehousemens' Association urge the Congress of the United States of America to do all in its power to protect the American system of free competitive enterprise and eliminate the dangers inherent under the program of extravagance and unnecessary spending and definite financing and insist upon government operation under a normal balanced budget. And be it further

Resolved, that a copy of this resolution be sent to every member of the Congress of the United States of America.

WHEREAS at its 58th annual meeting in San Francisco, Calif., in February, 1949, the American Warehousemens' Association urged the adoption by the Congress of the United States of America of proposals toward reduction

New Brochure Tells Bankers How to Use Warehouse Receipts


To
The Bankers
of America
Warehouse receipts can "Work" for you?
Practical data on their use and value
COMMITTEE ON BANKING RELATIONS • AMERICAN WAREHOUSEMEN'S ASSOCIATION

Front cover of brochure on handling warehouse receipts.

A BOOKLET "To the Bankers of America—Warehouse Receipts Can Work for You" has been issued by the American Warehousemens Association for use of members when placing warehouse receipts with banks. This booklet is the culmination of much work by members of the A.W.A. Banking Committee and represents the best information on the subject, condensed to essentials.

It explains the fundamental purposes of banks and warehouses, each acting as custodians of property of others; and mentions that, while many bankers are familiar with warehouse receipt financing, this knowledge ofttimes becomes buried among the problems that confronts the modern banker, and a very satisfactory loan may have been missed because the possibility of storing a marketable inventory in a public warehouse or a field warehouse was overlooked. The purpose of this booklet is to remind bankers that a full understanding of warehouse receipts may add many profitable loans to the bank's loan portfolio.

The three distinct classes of warehousing business are briefly described as are the provisions contained in warehouse receipts, explaining the terminology and other characteristics. There are two kinds of warehouse receipts, it explains, negotiable and non-negotiable. The two differ in actual use chiefly as to the manner in which the right of possession referred to therein may pass from one party to another, and in the manner in which the deliveries of the goods covered thereby can be effected. The most important advantages and disadvantages of each type of receipt are summarized.

The National Association of Refrigerated Warehouses and the American Warehousemens Association Merchandise Division are ready and willing, at all times, to cooperate to the extent of their ability in aiding bankers in matters pertaining to public warehousing and to warehouse receipts when used as collateral. Bankers are invited to call their local warehouseman and are advised that their inquiries will be welcomed.

View of members and guests at 59th annual dinner, American Warehousemen's Association, Edgewater Beach Hotel, Chicago, Ill., February 1, 1950.

of governmental expenses through bureau consolidation or elimination, and reduction in number of federal civilian employees, which will result in economy of operation and will not impair the maintenance of a high degree of efficiency, all as recommended by the Hoover Commission on Reorganization of the Executive Departments. Therefore

Be it Resolved that the American Warehousemens' Association at its 59th annual meeting in Chicago, Ill., reaffirm this resolution, and be it further

Resolved that a copy of this resolution be furnished each member of the Committee on Expenditures in the Executive Departments of both the Senate and the House of Representatives.

*Resolved,*that we the members of the American Warehousemen's association, assembled in Chicago at our 59th annual meeting, do petition the Congress of the United States to remove restrictions from the impartial enforcement of monopoly laws against any combination of business or of labor. We hold there is no place in a free country for a monopoly which raises costs for all citizens. We also hold there is no discrimination in favor of or against one group of citizens. It is further

Resolved, that our association officers be empowered and required to send a copy of this resolution to each of our Senators and Representatives.

Report on Uniform Code of Commercial Law

E. E. Hesse, Chairman of the A.W.A. Committee on Warehouse Receipts and Warehouse Law reported briefly on the proposed uniform code of commercial law, on which an article appeared in the January 1949 issue of ICE AND REFRIGERATION. Mr. Hesse said that this proposed uniform code, as so far as it applies to warehouse receipts it still in drafting stage and may be subject to revision from its present form. There is, therefore, little to discuss in detail with reference to its specific provisions until more is known of what may finally be proposed. A number of warehousemen have had conversation with the drafting groups and individuals and have expressed their points of view with good reception by those they addressed, an experience the committee had had in the previous year.

The Code, of course, represents a major departure from the past in the basis of law for commerce and there are widely divergent views on the advisability or wisdom of such a change in all quarters that will be affected. So the "pros and cons" are largely divided by other factors than the substance of the code. Among such other factors are liking or disliking of change, and in this country we all have a right to make such a choice.

Nevertheless, we should be aware that the proposed code has had the consideration of a very wide group of legal talent and is sponsored by those whose sincere interest is in the improvement of the law.

It was announced at this session that the next annual convention will be held at Boston, Mass.

Officers

Report of the Nominating Committee presented the following slate of officers for 1950, all of whom were elected.

President, Horace Wilson, Philadelphia, Pa.
Vice-president, J. Leo Cooke, Jersey City, N. J.
Treasurer, Willard W. Morse, Minneapolis, Minn.

Following introduction and installation of these officers, and introductions of the newly elected officers of the two Divisions, the convention adjourned.

Kearney Joins Cooke Warehouse Corp.

FRANK E. KEARNEY (Elizabeth, N. J.) has been elected vice-president and a director of the J. Leo Cooke Warehouse Corp., public merchandise warehousing and distribution company. Mr. Kearney resigned as general sales manager of the Lehigh Warehouse & Transportation Company, Newark, N. J. with which he had served for 17 years, to accept the new affiliation. Veteran of 20 years service in the warehousing, distribution and transportation industries, he is past president of the Newark Traffic Club (1945) and the Jersey City Traffic Club (1946).

He is presently a member of the Newark Aviation Council, Foreign Trade Council of the Newark Chamber of Commerce, Traffic committee of the Elizabeth Chamber of Commerce, Associated Traffic Clubs of America and the Metropolitan, North Jersey and Raritan Traffic Clubs.

Getting Fit For The Fifties

Refrigerated Warehousemen in Annual Meeting Point Attention to Building Better Business

PANEL presentations, open forums and general discussions of practical business and operating problems constituted most of the program of the 59th annual meeting of the National Association of Refrigerated Warehouses. The meeting was held at the Edgewater Beach Hotel, Chicago, Ill., Monday through Wednesday, Jan. 30 to Feb. 1.

Subjects discussed at the various sessions included cost reductions, employee and public relations, industrial relations, group insurance, warehouse loans, legislation, industry problems, research, inter-industry relations, relations with government agencies and publicity.

NARW officers for 1950. Left to right: Wm. A. Moore, New Orleans, La., Treasurer; Julius L. Gagini, Omaha, Nebr., President; Jerry Johnson, Washington, D. C., Vice-president.

Included in the entertainment program was a movie film made up of pictures taken by Don Horton of the Merchandise Division office and others of the San Francisco convention last year. It was shown Monday evening.

Preceding the convention a considerable number of members arrived early to attend the annual meeting of the Refrigeration Research Foundation which opened for a three-day session, Thursday, January 26. A detailed account of this meeting is published on another page.

First Timers" Meet "Veterans" At Early Breakfast

Carrying out the theme of the Convention "Get Fit for the Fifties," a large group of N.A.R.W. members decided that a good start in this "fitness" program would be to attend the early 8:00 a.m., Monday "First Timers" Breakfast. These "First Timers" Breakfasts are now an established "institution" in N.A.R.W. conventions, where the novitiate meet the "Veterans" and guests prior to the formal convening of the meeting. It serves as a "curtain raiser" for the succeeding day's program. Attendance at this breakfast meeting exceeded that of former years.

Officers and Executive Committee National Association of Refrigerated Warehouses

President, Julius L. Gagini, Omaha Cold Storage Co., Omaha, Nebr.

Vice-president, Jerry P. Johnson, Terminal Refrigerating & Warehousing Corp., Washington, D. C.

Treasurer, W. A. Moore, New Orleans Cold Storage Warehouse Co., New Orleans, La.

Executive Vice-president, William Dalton, Washington, D. C.

Executive Committee: G. F. Dodson, San Jose, Calif.; A. B. Efroymson, Cleveland; H. C. Emerson, Bridgeton, N. J.; H. A. Gross, St. Louis; C. B. Hart, Seattle, Wash.; J. P. Johnson, Washington, D. C.; W. A. Kopke, Chicago; T. E. McCrary, Memphis; W. A. Moore, New Orleans; E. E. Seymour, Detroit; C. E. Simmon, Oklahoma City.

President Arthur Otis, New York, introduced William C. Hutlow, Manager, Arrow Transfer and Storage Co., Chattanooga, Tenn., who spoke for the "First Timers." Mr. Hutlow expressed, not only for the "First Timers", but the "Veterans" as well, the idea that conventions provided an unequalled opportunity to benefit from the business experience of others and the personal interchange of ideas which each member can carry back for the benefit of his company, and the industry as well. Although young in years, Mr. Hutlow spoke like a "Veteran" in pointing out that research projects are opening new horizons for the refrigerated warehousing business, where many products not now utilizing this method of commodity preservation, will do so in the coming years and thus provide entirely new markets for the warehousing business.

Newly elected members of the Executive Committee are greeted by retiring president Arthur N. Otis. Left to right: T. E. McCrary, Memphis, Tenn.; C. B. Hart, Seattle, Wash.; President Otis; A. B. Efroymson, Cleveland, Ohio; H. C. Emerson, Bridgeton, N. J.

In responding for the "Veterans", Charles E. Eells, Vice-president, Manhattan Refrigerating Co., New York City, and a "Veteran" of many N.A.R.W. meetings, expressed the hope that "First Timers" would grasp the true spirit of N.A.R.W. conventions, and feel assured that the more experienced men in the industry would be glad to pass on to the newcomers the benefit of their accumulated experience.

Wm. Dalton, Washington, D. C.

Executive Vice-president
National Association Refrigerated Warehouses

A. F. Winston, Fulton Market Cold Storage Co., Chicago, General Convention Chairman, said that speaking from experience he could only reemphasize the thoughts of the preceding speakers, and complimented the "Veterans" on their willingness to assist the "First Timers."

Harlan Nissen, Vice-president and General Manager, Terminal Refrigerating Co., Los Angeles, and a past president of N.A.R.W., T.R.R.F. and A.W.A., felt that most people, like himself, attended conventions for three specific purposes—to acquire knowledge; to meet with fellow businessmen on a social basis, and most important, discussions at conventions were a challenge to do more constructive thinking.

Briefly summarizing the work of T.R.R.F., he pointed out that the Foundation has accumulated a fund of scientific information and is providing the "know how" to do a better warehousing job. Fortified with this scientific knowledge, he continued, the industry in turn is better equipped to perform customer services on a plane of dignity and factual data that should characterize any essential and responsible business.

Convention Opens

The convention was opened Monday morning by President Arthur N. Otis. There followed a tribute to two members of the Association whose deaths had occurred during the past year.

William A. Moore spoke in memory of William M. O'Keefe, formerly secretary of the Association. Mr. Moore expressed the esteem of the members and their apprciation for Mr. O'Keefe's interest and conscientious service for the warehousing industry for so many years.

Harlan Nissen spoke in memory of Leon A. Bailey, formerly executive-manager of the Pacific States Cold Storage Warehousemen's Association. Those who knew Mr. Bailey, Mr. Nissen said, loved him the most. He furnished inspiration and set an example to all by his way of living and his conscientious outlook on life. Memories of men, Mr. Nissen said, live on, not in dollars won, but in services and duties performed and from this standpoint Mr. Bailey's memory would be cherished.

Report of Treasurer

The financial report was presented by J. L. Gagini of Omaha. This report stated that the association started the year with a balance of some $40,000; during the year collections had amounted to about $62,000 and expenditures of about $64,000; leaving a total balance of $37,499.46.

Employee Relations

A film on employee and public relations was shown. This film brought out the fact that employers should make an effort to understand what employees think and know their attitude toward the company and business problems of the day. A fear of insecurity, fear of being taken advantage of are two primary considerations in employee psychology that should be thoroughly understood. A valuable part in employee relations is to keep employees informed on what the company is doing and provide them with some outlook on what their future is.

Following the presentation of this film a forum on employee relations was held, with E. M. Dodds, Kansas City, Mo., acting as moderator. The discussion was entirely impromptu, coming from the floor of the convention.

In the discussion it was pointed out by some of the members who had been engaged in the warehousing business for many years, that only recently has the subject of employee relations been given serious consideration. Generally speaking most employers now find it necessary to know the problems of employees and know what they want. A considerable number of those participating in the discussion said that they consider themselves as having very favorable employee relations. Among the things provided are thirty days' sick leave pay, pay for all holidays and an occasional day off. In one case a company inaugurated a cost study which showed average handling of 2200 lbs. per man hour but by working with the employees and arranging more efficient methods, this has now been increased to 3600 lbs. per man hour. Mechanical handling was mentioned as a means of reducing the costs and this equipment has been welcomed by employees as a whole.

It was also brought out in this discussion that more personal contacts and conferences with employees is needed in order to find out their problems and what they want. Meetings with small groups particularly are valuable in this connection. One very effective means of meeting with employees is holding periodic safety meetings with representatives of management and employees present. This work is usually conducted by a safety engineer of the company in cooperation with the foremen and other key employees.

Industrial Relations

The subject of Industrial Relations was covered by another panel discussion at the Monday afternoon session, W. J. Mills, Los Angeles, Calif., acting as moderator.

L. M. Ashenbrenner, Toledo, Ohio, opened the discussion. Industrial Relations, he said, will continue to improve as long as we keep our present free form of government, and nowhere in the world does the employee have a better

opportunity to express his opinions as pertaining to his job security as right here in this country. The efficient operation of any plant, he said, depends on the respect of the employees for the capacity and performance of management. Employees who know where they fit in the company and why their work is important have better work attitudes.

The best source of information about employee attitudes is the foreman. And, another valuable source is to obtain suggestions and opinions from employees through interviews. In too many industries the individual employee is completely in the dark concerning the part he plays in the total operation. For instance employees should know that in a refrigerated warehouse built twenty years ago at a cost of 3 million dollars and employing sixty people, each job represents a 50 thousand dollar investment, and that this same warehouse built today would cost approximately 5 million dollars and would represent an investment of 80 thousand dollars per job, thus it is clear that the per job investment in the refrigerated warehouse is considerably more than the average capital investment required in manufacturing industries generally.

Turning his discussion to the present, Mr. Ashenbrenner listed the following items that are now being considered by workers in making up their payroll demands: pensions, medical and unemployment insurance, severence pay, wages, disability pay, paid vacations, guaranteed annual wage, and guaranteed work week. Depending on individual circumstances, employers may be faced with bargaining soon on several or all of these items, and on these questions and for these questions adequate answers must be found on a sound financial basis and with due regard to the welfare of both the company and the workers, he concluded.

C. A. Bowen of Nashville, Tenn., told about labor relations in his company. Recently the company has installed mechanized handling equipment. This equipment has been welcomed by the workers and its efficiency and the attitude of the workers toward it has played a large part in good labor relations. They operate on the theory that employees should have an interest in the company and to cultivate this interest, the company should keep them informed and welcome suggestions, including complaints, from them. The company provides hospital insurance but they do not operate a pension plan. Their best contact with the workers, they have found, is through the foremen.

John W. Leslie, Signode Steel Strapping Co., Chicago, gave an interesting talk on profit sharing. Original profit sharing plans, under which employees are paid wages and a percentage of profits, Mr. Leslie said, are quite old and many such plans have been in successful use for many years. But one of their disadvantages is that employees come to look upon their profit shares as part of their pay and when lean years force a reduction, they are apt to be resentful of their decreased share unless special effort is made by management to inform them specifically as to why the reduction was necessary. The present trend of such plans now is toward a trustee arrangement under which these profit shares are paid into a trust fund and then paid to the employee in a lump sum when he is retired or as severance pay.

His company, Mr. Leslie said, had installed such a plan in 1941 to provide for retirement pay and severance pay before retirement. He said it had been very effective for holding the loyalty of employees and in reducing turnover. It had given the employees much more interest in the welfare of the company and also provided a bulwark against the ideas of socializing business. Profit sharing, he said, is an adjunct of the pension plan and the two could be worked together.

A Major Industry "Puts on Long Pants"

AN OUTSIDE observer who may have attended the meetings of The Refrigeration Research Foundation and the National Association of Refrigerated Warehouses, could not help but feel that here was a basic industry — vital to the advancement of a sound world economy — entering the second half of this historic century, with a determination that its service to the community was to be of greater significance than any other period in its history. Resolute too, in its belief that under a free enterprise system, it assumes its rightful place among leading American industries, on a plane of business dignity.

Employing the experience gained in the past half century, as a guide, to set its forward-looking course for the future, the industry entered a new era when The Refrigeration Research Foundation was established seven years ago. If there were any doubts at that time — and there were — as to the value of a research program, it can now be written in large letters that those doubts have been completely dispelled. The results that have already been attained, as well as its future program, are powerful influences in changing the habiliments of the refrigerated warehousing industry.

It may be said that few industries have been as fortunate in securing the leadership that has comprised TRRF directorate, as well as its Advisory Council of eminent food technologists and scientists. Their voluntary contribution of scientific knowledge has provided not only the warehousing industry, but users of warehouse facilities as well, with such factual data that not a few, but many, are enjoying the fruits of better living. With such an unselfish objective, it is logical that these activities reflect a more stabilized industry and are a challenge to provide a better customer service. Such, TRRF has meant to the refrigerated warehousing industry.

As a mighty arm of the warehousing industry, it is and will continue to provide the scientific "know how" so necessary to attain this goal. TRRF has brought business dignity to a staid American industry, which no longer will be referred to "as those plants back of the tracks," but recognized as one of the nation's foremost service institutions. Likewise, it has brought a new sense of responsibility to industry personnel, from the warehouse worker to top management, where real security will be found in providing an essential service and in doing that job well. As was so appropriately stated, TRRF is now uncovering "pay dirt" and furnishing industry the skill, knowledge and tools for doing not only a better job on "stable" warehouse commodities, but more important, proving the necessity from an economic standpoint of warehousing an increased number of commodities heretofore not stored in refrigerated warehouses. All this, the direct result of its well planned research program under the capable direction of Dr. H. C. Diehl, Director and Secretary of the Foundation.

SUCH industry accomplishments are no mere happenstance. They must of necessity be the best laid plans of individuals working cooperatively toward a common end, and to many of the members of the NARW, must go the credit for this industry achievement in backing their faith in the future of the business with financial support. This well-managed trade association, entering its sixtieth year of service to its membership, demonstrated the virility of its progressive thinking in its 59th meeting just concluded. It was an inspiration to observe the intermingling of the so-called "veteran" operator who has attended many NARW meetings with the "first timers" comprising in the main the younger executives anxious to profit by the experiences of the past and to increase the momentum of a great business in the challenging times ahead.

In keeping with the tempo of its advanced thinking and under the skillful planning of Executive Vice president William Dalton, the NARW program was a reversal from the usual type of convention program, in that the audience, through open forum meetings had the opportunity to freely discuss basic problems concerned with operation, management, personnel, customer and government problems. These "audience participation" programs provided more "pay dirt" information, neatly packaged to carry home and use when required.

The industry, welcomed the opinion of its customers in respect to how its service could be improved. No holds were barred and the customer knew that the refrigerated warehouse industry had no intention of emulating the ostrich.

No longer was the industry going to permit the bushel basket to conceal the light, and soon customers, through a public relations program, would be informed of the scientific knowledge, skill and investment required to maintain the nation's warehouses for perishables.

Yes, a great American industry strides forth in long pants to meet the challenge of the coming half century, fortified with knowledge, confidence and desire to serve a great nation.

Following conclusion of this discussion the report of the nominating committee was presented, resulting in the election of the following new members of the executive committee: H. C. Emerson, Bridgeton, N. J.; A. B. Efroymson, Cleveland, Ohio; C. B. Hart, Seattle, Wash. and T. E. McCrary, Memphis, Tenn.

N A R W Group Insurance Plan

The new N.A.R.W. group insurance plan was presented to the convention by H. Cochran Fisher, insurance counsel of Washington, D. C., assisted by Jason Stoughton of the State Mutual Life Insurance Co. Under this plan all present regular full-time employees, actively employed officers, partners and proprietors of an insured company who have not reached their seventieth birthday, will be eligible for life insurance. Executives will be insured for $5,000; supervisory employees $2500, and all other employees $1500.

This plan, Mr. Fisher explained, provides an opportunity for furnishing insurance for employees at an advantageous price, and its advantages are that it helps to create better employee relations, reduces labor turnover, improves morale, and provides more security for employees. It also attracts a higher type of employee.

Following Mr. Fisher's presentation, a number of questions were asked and these were answered by Mr. Stoughton, a representative of the insurance company providing the policies under this plan.

Banking Committee Breakfast

The second day of the convention opened with a breakfast meeting of the AWA committee on banking relations composed of representatives of the National Association of Refrigerated Warehouses and the Merchandising Division. The purpose of the meeting was to introduce and discuss distribution of the new brochure published by A.W.A. to acquaint bankers with the proper form and use of warehouse receipts. A more complete report of this meeting is included in the report of the A.W.A. annual meeting.

Third Session

The third session of the convention was opened with the movie film, "The Quarterback." This film portrayed the attitude of some of the youthful employees entering the business world and the transition that must occur to make a successful employee.

Legislative Round Table

A discussion of National legislative activities was led by Jerry P. Johnson of Washington, D. C., chairman of the N.A.R.W. Legislative Committee.

Mr. Johnson warned of the menace of a growing trend toward socialistic and communistic ideas in government. The only way these trends can be counteracted, he said, is for citizens, including all business men, to keep in touch with bills introduced in Congress and make their reactions felt either for or against them. Particularly is it necessary that members of the association respond to appeals for help when the association starts working for or against a desired piece of legislation.

Pointing to the trend toward growing expenditures, Mr. Johnson said that the present National government is spending three times annually the largest amount ever spent in one year during the Roosevelt administration. Further, he pointed out, that in the last presidential election only 49 per cent of the eligible voters voted. This, he said, is a clear indication that the voters of America need to take their voting duties more seriously.

Mr. Johnson's report was issued in mimeographed form covering the amendments of the Commodity Credit Corp., clarification of overtime compensation, Farm Price Support Agricultural Act of 1949, the Wage Hour Act, Farm Market Facilities Finance Bill, Warehouse Receipts, Fisheries Stabilization Corp., increase in postal rates, racial discrimination in employment, increasing the loan capacity of the Reconstruction Finance Corp., social security expansion, carrier legislation, foreign trade zones, health insurance, report of the special committee on revision of Fair Trade Practice Rules, and other pending or proposed National legislation of interest to the refrigerated storage industry.

Industry Problems

An open forum discussion of industry problems conducted informally, brought up a large variety of subjects, including separate meetings for the N.A.R.W., discussion of the booklet issued on warehouse laws issued by the banking committee, A.W.A. legal liability insurance, problems in connection with freezer doors, use of pallets, proposed national advertising program, and other subjects of direct practical interest to the refrigerated warehousing industry. This discussion occupied two short sessions, the first starting Tuesday morning, led by Henry C. Kuehn, Milwaukee, Wis., and the second, an afternoon session led by Harold C. Emerson, Bridgeton, N. J.

Responding to a request for an informal discussion of the Refrigeration Research Foundation, Dr. H. C. Diehl, director of the Foundation, told about its founding for the purpose of conducting research to find facts that would help in better storage processes, and to explore possibilities of new products for storage. For an industry to grow, it needs a constant influx of new ideas and the purpose of the Refrigeration Research Foundation is to accumulate a fund of fact that the industry can use in the business of refrigerated warehousing. It also develops information in regard to commodities produced by related industries.

You and Your Banker

C. J. LaMothe, St. Louis, chairman of A.W.A. Committee on Banking Relations, reported on the activities of the committee, the principal part of which consisted in the preparation of the booklet on warehouse receipts prepared especially for bankers who handle warehouse receipts. The contents of this booklet, he said, represented a large amount of correspondence and discussion among and between the members of the committee, officers of the two divisions and bankers located in various sections of the country.

The idea, he explained, was to present information on commodities and use of warehouse receipts. It had been edited closely from a legal standpoint and by representatives of industry and banks. He explained that it had been endorsed by the American Bankers Association, the Morris banks, and others as mutually beneficial to warehousemen and banks. Referring to the breakfast meeting held by the committee Tuesday morning, he said that the discussion at this meeting brought out the necessity of warehousemen contacting bankers to make this information available where it would do the most good.

Fourth Session

A preliminary event to the opening of the Wednesday morning session was a film presented by the American Restaurant Association on the production, transportation and distribution of foods which showed views of restau-

rants in cities like Chicago, Kansas City, San Francisco and Los Angeles and brought out vividly the fact that foods require constant refrigeration from the point of production to their final consumption.

If I Were a Refrigerated Warehouseman

The refrigerated warehousemen attending this session heard their customers talk back to them through a special panel representing frozen foods, food distributors, the poultry industry, and a publisher of a distribution trade journal, all telling them what they would do if they were refrigerated warehousemen. These speakers gave their opinions as to how they thought warehouse service could be improved. Such steps as handling of small lot commodities, providing space for sorting shipments, scheduling of shipments, loading of refrigerated cars and trucks, billing methods, etc., were discussed.

Moderator J. L. Gagini, treasurer of the association led the discussion and participating were A. E. Huff, director of Transportation & Warehousing, Birds-Eye-Snider Division of General Foods Corp., New York City; Malcolm J. McCluan of Morrison & McCluan, Pittsburgh, Pa.; Dr. Cliff D. Carpenter, president, Institute of American Poultry Industries, Chicago; and Harry Webster, editor and publisher, "Distribution Age", New York City.

Mr. Huff pointed out that in the frozen food industry, withdrawal charges creates a problem to the sellers and distributors and discourages shipments of carload lots to small consuming areas. He suggested that some means should be found to iron out this situation.

Mr. McCluan, commenting on public relations, said that the warehouse business is intangible and is becoming more complex so that customers need to be constantly informed in regard to services available. Some warehouses, he said, do not have temperature and humidity facilities required and customers should be able to get merchandise promptly and products into storage promptly.

Dr. Carpenter pointed out that the poultry and egg industry was required to deliver high quality goods to customers and at the same time pay the producer adequate prices. He suggested that more uniform records between houses was desirable. He said it was also necessary to recognize the changing pattern in the production of poultry in the trend toward large scale localized commercial production as away from the old method of depending largely upon supplies coming from farm flocks. He said there was also a trend toward shipping by truck and warehouses should provide facilities for unloading and loading of trucks.

Mr. Webster said the warehousing industry needed more publicity as a means of disseminating knowledge among customers as to the services available. The "Q & A" pamphlet issued by the association, he said, is a valuable part of such a program. The success of any public relations program, he said, depends upon the broadest circulation among those to be reached. It should be planned thoroughly in advance. Customers and methods are constantly changing and warehousing customers need this information he said.

The new N.A.R.W. folder, "Q.A." answers questions most frequently asked about refrigerated warehouses. This folder was prepared for distribution among refrigerated warehouse customers and prospective customers. It was described and illustrated in a special article in the January issue of ICE AND REFRIGERATION.

Following presentation of these talks, informal discussion centered upon the changing pattern of the egg market. With particular reference to the increased production of eggs, it was pointed out that Department of Agriculture scientists and economic advisers are stressing the view that products should be utilized as largely as possible where produced. Shipping across the country increases costs and time is a big factor in certain types of products, and if this was carried through to its ultimate conclusion the refrigerated warehouse industry would store less and less eggs.

However the opinion was expressed that specialized production of poultry will never replace farm flocks because farm women are becoming interested in the profit opportunity of raising chickens on the farm. The trend toward using middle west poultry in the middle west and eastern poultry in the east, western in the west, will not use up all the surplus and there still will be a volume of both poultry and eggs for storage. The tendency of farm flocks to have a high peak laying season in the spring makes it more and more difficult to get enough quality fresh eggs on the market the year around, particularly during July and August. To maintain a constant supply of fresh eggs the year around, it will still be necessary to store eggs during the high production period.

Government Storage Problems

Following this panel, M. J. Hudtloff, director, Transportation and Warehousing Branch, Production and Marketing Administration, U. S. Department of Agriculture, spoke. He told the warehousemen about government storage problems. Title of his talk was "Your Government and You."

Mr. Hudtloff pointed out that government people have problems the same as those in industry and by getting together and taking over these problems each finds what the other is up against. The operations of the Production and Marketing Administration and how it affects refrigerated warehousing is a problem that is to their immediate interest.

The Production and Marketing Administration, he explained, brings together a large part of the program carried on by the Department of Agriculture. In the production field it administrates the price support program and related activities. It handles adjustment operations, such as acreage allotments and marketing quotas; it carries on an agricultural program aimed to assist where depletion of water and soil resources are needed. In the marketing field, it provides a number of services such as market news, developments of standards and construction and grading. It administers several regulatory acts including the United States Warehouse Act, the National School Lunch Program, and secures large quantities of food and fiber for use in the export program.

The most important program in the storage field now, he said, is the so-called storage expansion program which is tied in tightly with the price support program. This is important, he said, because a producer must provide safe storage for his product and during 1948 producers were caught in many cases without storage facilities. To meet this situation, the Commodity Credit Corporation made loans available for construction of storage facilities.

During the war, he said, the Department of Agriculture was faced with a shortage of cold storage space when primary emphasis was being placed on programs of food for the armed forces and allies. To alleviate this shortage, the Department in 1942 leased from the City of New York the Municipal Terminal Market and later a limestone cave near Atchison, Kans. On September 20, 1949, the lease on the Bronx Market was terminated. The limestone cave storage near Atchison, Kans., however, is being held by the government because of the investment in that project of over two million dollars.

Concluding he said that the Department of Agriculture had no desire to get into the commercial warehousing in-

dustry and will only do so under an extreme emergency. No new construction, he said, would be undertaken except with funds appropriated by Congress for that purpose. He also stated that it is the policy of the government to store as near as possible to the point of use, or port, or where produced. The PMA does not expect to compete with or replace present cold storage facilities since its charter provides that it shall not add new cold storage facilities except where such space is not available from present existing warehouses.

Pacer Luncheon

One of the high spots of the convention was the Pacer Luncheon held Wednesday noon conducted by the Pacers, members of N.A.R.W. who are especially interested in industry public relations activities.

In line with the theme of the Pacers, Dr. Allen A. Stockdale of New York City known as the "Pitching Parson" addressed the meeting on "Preserving More Than Food." He told them that American freedom cannot be preserved by freezing. If we are to preserve the opportunity of thinking and expressing ideas essential to the American Way of Life, he said, the 20 million who did not vote in the last election will have to get to the polls next time. He paid high tribute to the work of the Pacers and said it was activities such as their's which would thaw out apathy and indifference to the responsibilities of American citizenship.

We hear much, he said, about the service motive supplanting the profit motive in American business, but this is unreasonable and cannot be applied. Before we have a business we must have invested capital and capital will not work unless it is paid for. Swamps cannot be changed into gardens without energy and work. It all takes effort and risk and work, and this is the only way that achievements can be created.

Life Memberships Presented

An important part of this meeting was the presentation to two members of life memberships in the National Association of Refrigerated Warehouses. These presentations were made to G. D. Allman, chairman of the board of the United States Cold Storage Corp., and Dr. S. C. Prescott, chairman of the board of the Refrigeration Research Foundation.

Presentations of these certificates of life membership were made by Vallee O. Appel in recognition of their exceptional loyalty to the industry, efficiency of performance, extra-curricular activities, outstanding contributions to the industry in research, patriotic service in the affairs of government and particularly in the service of national defense during emergency.

Mr. Appel commented that the association has only eight such life memberships as follows: Prof. F. W. Allen, Davis, Calif.; William Broxton, South Deerfield, Mass.; William C. Crow, Washington, D. C.; A. R. Current, The City Products Corp., Chicago; John A. Hawkins, San Francisco; Dr. Mary E. Pennington, New York City; J. R. Shoemaker, Elmira, N. Y.; and J. F. Singleton, Ontaria, Canada.

The citation to Mr. Allman is published on another page of this issue. The citation to Dr. Prescott reads as follows:

"Samuel Cate Prescott, internationally pre-eminent scholar and scientist; outstanding teacher; dean emeritus of the Massachusetts Institute of Technology; author of authoritative volumes in the fields of bacteriology and food technology; recipient of numerous honors and awards in recognition of highly meritorious performance in research; chairman of the board and scientific advisor of the Refrigeration Research Foundation from the date of its inception in 1944 to the present time; self-sacrificing in his generous contribution of invaluable service to the progress of refrigeration and refrigerated warehousing; a man than whom there is none more faithful to our industry."

Final Session

The afternoon session featured a "Get Fit for the Fifties" round table in which the warehousemen discussed public relations problems. Theme of the discussion was the importance of gathering and disseminating information about the industry to customers, researchers, educators, students, editors and the general public. The warehousemen were called on to make information available to association headquarters for this purpose by G. A. Shoemaker, Elmira, N. Y., chairman of NARW's Public Relations Committee.

Mr. Shoemaker pointed out that public relations is one of the newest functions of management in the refrigerated warehousing industry, which consists primarily in bringing about better understanding between customers, prospective customers and the public as a whole. The refrigerated warehousing industry has a big story to tell but it is being told the poorest of any other industry. What we need to do, he said, is to circulate information about the whys, whens, whats, hows and who's of the warehousing industry. The industry served by refrigerated warehousing wants and needs this information, basic information as to the industry and the service is can provide.

This information, Mr. Shoemaker explained further, is to be compiled through a questionnaire covering the following basic information: (1) General information covering space, replacement value, number of employees, etc. (2) Power house operating costs and expenses, including repairs, maintenance, equipment, etc. (3) Handling expenses including labor, supplies, equipment, and repairs. (4) Selling and advertising expenses including salaries of salesmen and promotional advertising. (5) Administration expenses including salaries, supplies, insurance, rent, etc.

Mr. Shoemaker suggested that a committee be appointed to develop a plan to start compiling this information immediately.

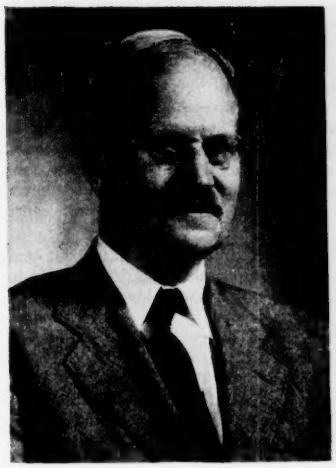
Resolutions

The report of the Resolutions Committee presented by A. B. Efroymsen of Cleveland expressed appreciation to the president, Arthur N. Otis and other officers of the association for their leadership and contributions during the previous year. Thanks were extended to M. J. Hudtloff and Dr. Allen A. Stockdale and other speakers on the convention program.

The resolutions also expressed a tribute to the memories of William M. O'Keefe and Leon A Bailey who had served the best interests of the association and the refrigerated warehousing industry for many years.

At this session it was announced that the 60th annual convention of the American Warehousemen's Association and affiliated divisions will be held at Boston, Mass., in the Statler Hotel, dates to be announced later. The only previous annual A.W.A. meeting held in Boston was in 1896.

Following the installation of the new officers, the group adjourned to meet with the Merchandise Division in the final session of the A.W.A. convention which followed immediately.



Dr. S. C. Prescott, Boston, Mass.
Chairman of the Board
Refrigeration Research Foundation

Arthur N. Otis, New York, N. Y.
President,
Refrigeration Research Foundation

Dr. H. C. Diehl, Berkeley, Calif.
Director
Refrigeration Research Foundation

Refrigeration Research Foundation Sixth Annual Meeting

REPORTS on the progress of previous and current research projects and an outline of future work was presented at the sixth annual meeting of The Refrigeration Research Foundation held at the Edgewater Beach Hotel, Chicago, Ill., starting Thursday, January 26, with an all-day meeting of the Scientific Advisory Council. The Refrigeration Research Foundation Council and Membership Meeting was held Friday at which progress reports were made on four research projects. Saturday the annual membership and business meeting was held. The series of meetings was concluded with a Sunday morning breakfast of the executive committee at which officers were elected and other business was transacted.

Officers and Executive Committee

Chairman of the Board, Dr. Samuel C. Prescott, Boston, Mass.

President, Arthur N. Otis, New York, N. Y.

Vice-president, R. C. Muckermann, St. Louis, Mo.

Treasurer, Wm. A. Sizer, Chicago, Ill.

Secretary and Director, Dr. H. C. Diehl, Berkeley, Calif.

Assistant Treasurer, Wm. C. Baker, Chicago, Ill.

Assistant Secretary, E. G. Erickson, Chicago, Ill.

Executive Committee of the Board of Governors: E. M. Dodds, Chicago, Ill.; Arthur N. Otis, New York; Wm. A. Sizer, Chicago; J. F. Meagher, Baltimore; P. D. Burrill, Boston; Richard Muckerman, St. Louis; Harlan J. Nissen, Los Angeles.

Council and Membership Meeting

The meeting of the Council and Membership held Friday, brought out four excellent discussions of work on the various projects having foundation support. The investigation on refrigerated storage of green and roasted coffee was discussed by Clarence E. Baker, Purdue University; a report on this matter had been printed in ICE AND REFRIGERATION in January 1950, page 29.

Dr. Baker gave a number of interesting highlights including statistics showing the extent of coffee imports and the producing countries. Since it is known that coffee readily absorbs odors and also contains many complex volatiles, he said, it was surprising that protection by storage at reduced temperature had not been more widely used or, at least, thoroughly investigated. A number of details in the investigation were recounted and at the conclusion Dr. Baker answered a number of questions.

Uses for Refrigeration

An extensive study of uses for refrigeration and refrigerated warehousing was described by Bernard E. Proctor, Massachusetts Institute of Technology. Some idea of the scope of the work was evident in his statement that one part of the investigation covers 200 different periodicals. The application of refrigeration related to items in the news, Dr. Proctor said, is the large cooling equipment utilized at Hanford and Oak Ridge where atomic energy materials are processed. He described cathode ray sterilization followed by cold storage of certain products which has promoted detail studies of the factors which limit storage time and affect quality.

The refrigeration of bulbs and flowers as well as seed grain offers opportunities for producing better yield. In addition it reduces insect infestation and provides a low temperature cycle in the life of some plants which may prove beneficial. Dr. Proctor called attention to the large increase in the distribution of orange juice concentrate and suggested that many other juices as well as milk may eventually be distributed in concentrated and refrigerated

form. He discussed a number of applications of refrigeration in the medical field. In addition to the anaesthetic effects of refrigeration, he called attention to its use for aiding victims of burns and hemorrhages. Among the medical supplies held at reduced temperature, are a number of antibiotics, biologicals and vitamin concentrates.

Storage of Candy

An investigation of great importance to the candy and nut industry was described by J. G. Woodroof of the Georgia Experiment Station. This project was initiated by the Refrigeration Research Foundation to determine what temperature and other conditions contribute to best preservation of peanuts and pecans. Since such large quantities of these nuts are used in candy, the interest of the confectioners was developed and their association joined in to support the work. Dr. Woodroof described the scope of the investigation and showed a number of excellent slides to illustrate some of the information which has been developed in regard to conditions suitable for storage and handling candies of different types. Some of the results of the investigation were given by Dr. Woodroof as follows:

Effect of temperature: At the present time, many fine candies can not be handled through normal channels of trade in the south during summer months. While temperatures as low as 32 F., or even freezing temperatures as low as 0 F., were excellent for holding most candies for a year or more, studies have shown that the chief advantage of refrigeration—preventing insect infestation, retarding, rancidity, preventing softness, and retarding or preventing blooming of chocolates, can be had by holding candies constantly at 48 to 50 F.

In long-time storage tests with nut candies for four years, it has been found that the lower the storage temperature the longer the storage life of the candies, especially those containing peanuts and pecans. It appeared that the shelf life of peanut candy bars was prolonged by five to eight times by lowering the storage temperature from an average of about 80 to 34 F.

Effect of humidity: Hard candies (stick candy, suckers, drops, peanut brittle, caramels, etc.) with a moisture content of about .75 percent requires a relative humidity as low as 40 percent to prevent gain in weight, stickiness, blending of colors, and lumping in package. Some candies (chocolate covered creams, nuts, and fruits, chocolate bars, coconut candies and cream mints, etc.) with a moisture content of five to seven percent are maintained in optimum condition when stored at a relative humidity of 55 percent. Slightly moist candies (marshmallows, etc.) with a 16 percent moisture keep best at a relative humidity of about 65 percent, regardless of temperature.

The investigation in regard to nuts is continuing and California-grown almonds will also be included in the project. In his further discussion of storage and handling of nuts, Dr. Woodroof declared that nuts do not give up foreign ordors or flavors, once they take them up; also, despite numerous attempts, no practical insect-proof package has been developed. On the other hand, there is no insect infestation if nuts are stored at 48 F. or lower. At the same time the cold storage will extend the life of the nuts from one to 12 months. In summary, it was pointed out, refrigeration solves most of the problems in keeping and handling nuts.

Air Purification in Cold Storage

An informal discussion on air purification in cold storage concluded the session. The first speaker was Wilbur Pentzer, United States Department of Agriculture, who reported some recent tests of effectiveness of activated carbon to reduce the ethylene and other volatiles contained in the air and lengthen the storage life of apples and pears. Commercial type air purification equipment operated in the recommended fashion did not bring about significant reduction in ethylene content. One room with this equipment and another without it showed about the same results. In these test rooms, by utilizing more absorption equipment, some of the other volatiles were reduced to about one-third normal concentration. When similar methods were used in commercial size rooms, however, the results were not comparable.

Dr. Robert Smock, Cornell University, pointed out that it is not always possible to duplicate the test conditions in commercial rooms. They vary considerably in a number of factors including temperature in the different parts, air circulation pattern, and leakage of air. Another important factor, Dr. Smock pointed out, is the maturity of the fruit stored in the room. If the fruit has advanced beyond a certain point in maturity, air purification will have no effect. A number of warehouses, he pointed out, have utilized air purification with benefit in the storage of fruit as shown by a close check of the operations.

Storage of Pears

An investigation of air purification in the storage of pears was reported by Elmer Hanson, Oregon State College. The project included commercial size rooms as well as small test chambers. The laboratory scale tests showed definite benefits on Bartlett and Anjou pears.

Analysis of room atmosphere showed that volatile concentration in room air was more effectively controlled during the early part of the storage period. The results in the commercial size rooms were not particularly significant. Dr. Hanson reported that trained inspectors were unable to perceive any particular benefit from the storage in spaces equipped with air purification machines. He also emphasized the fact that maturity is always a limiting factor in regard to benefit from air purification.

A summary of the subject was presented by Dr. Baker who then described the project being set up at Purdue to investigate complete atmospheric control in relation to preservation of a number of warehouse commodities. The annual meeting of the foundation was opened by an all-day session of the Scientific Advisory Council. The members who were privileged to attend this meeting had found it intensely interesting as the experts reviewed the different projects and gave their suggestions for the future course of the investigations.

Annual Membership and Business Meeting

The annual membership and business meeting opened Saturday morning with an informal report by the chairman of the board, Dr. Samuel C. Prescott. Dr. Prescott referred to the discussion of current projects at Friday's session as an example of the important research work being done by the Foundation. The members, he said, could not but have felt a sense of pride in their part in this work if they could have heard these reports.

The Foundation, he continued, has gathered together a vast amount of practical, usable information and the members of the industry owe it continued support. There is no other research organization in the country which has carried out so skillfully the work it set out to do. This has been due largely to the organization set-up, made up of members of the industry and leading scientists, headed by Dr. H. C. Diehl who is himself, not only a scientist, but one who also knows and appreciates the necessity of a practical viewpoint.

President's Report

Vallee O. Appel, Chicago, reporting as president also spoke informally. He pointed out the assets the foundation has in the services of Dr. Prescott, Dr. Diehl and members of the Scientific Advisory Council, these men representing a vast accumulation of knowledge of foods anti the technology of the refrigerated warehousing industry.

The Foundation, he said, shows an increase in subscriptions and a decrease in expenses during the past year, but the true value of the organization is not reflected in net dollar worth but in the practical knowledge obtained and disseminated. One of the weak parts of the program is in the members not making full use of the information available. There is also need of a closer touch with allied industries whose members are customers of refrigerated warehouses. However, if the foundation has done no other thing it has brought good public relations and recognition of the good things the warehousing industry has done. The Foundation, he concluded, has gone through its growing up stage and has now reached a state of maturity. Future efforts, he said, should be toward more "pay dirt" without neglecting the necessary fundamental research.

Treasurer's Report

Reporting on finances of the Foundation, Wm. A. Sizer, treasurer, Chicago, announced that there had been a substantial improvement in the financial position of the Foundation for 1949. Cash and U. S. Treasury bonds at the end of 1949 totalled $8,364.78 more than at the end of 1948. A substantial increase of cash receipts for the year was brought about by an increase in member subscriptions during the year of $12,405.85. Total assets as of December 31, 1949 amounted to $127,050.20 as compared to $119,-189.98 on December 1, 1948.

Report of the Director

A printed 50-page brochure distributed at the meeting contained the formal report of the director for the year 1949. Commenting on this report informally, Dr. Diehl expressed thanks for the assistance of those with whom he had worked and said he especially appreciated being able to know at all times what money was available for various projects and how it was being spent.

The printed report points out that in its first six years the Foundation has aided 34 projects in 20 research agencies. It has established and maintains funds for short-term investigations in 8 institutions. During the past four years it has conducted 10 regional training conferences for operating personnel of refrigerated warehouses in the United States and Canada. Its list of publications has grown steadily and includes both reports of research aided and current information service publications.

The Foundation has entered into cooperative relationships—formal and informal—with organizations of several industries that make use of, or plan to make new or increasing use of, the service of refrigerated warehousing. Among these industries are the following: dairy, poultry, citrus fruits, deciduous fruits, meats, fisheries, peanuts, confectionery, and coffee. The objective of these mutually fruitful and agreeable contacts has been merging of thought and action in the solution of problems of commodity storage, which are the common concern of those who produce and those who store the products. Through many conferences, much correspondence, and free exchange of information, the Foundation has maintained active relationships with many other industrial groups, including transportation, which closely share interest in technical problems with the refrigerated-warehousing industry.

The year 1949, the report continued, has witnessed no retardation in the amazing rate of progress of science in its various fields. Extension of applications in industry goes on at a rate commensurate with sound economy. We have arrived at the end of a half century, as measured by the calendar—fifty years that have seen greater technical progress than that of all the previous history of man, and this past year has seen increasing effort to use research in terms of human values.

Research Projects of 1949

The major research projects of 1949 described briefly in the report are: frozen products: eggs, meats, milk, shrimp; refrigerated products: citrus fruits, peanuts, pecans, candies, coffee, popcorn; atmospheric control in refrigerated storage rooms; pre-treatment methods for refrigerated products; basic engineering studies; other research projects.

Major research projects of previous years also were listed and described briefly as follows: dried fruits, frozen-pack juices, storage atmosphere and sanitation, vitamin C, frozen poultry, precooked frozen foods, chilling injury of vegetables.

Touching briefly on major research projects under consideration, the report states the Foundation is considering (1) the control of moisture vapor (humidification and dehumidification) in "cooler" storage rooms, that is, those held above 30 F.; (2) the practical prevention of condensation on goods, such as candies and canned foods, as they are moved from refrigerated to non-refrigerated atmosphere; (3) thermometry in cold storage rooms, (4) properties of cold storage insulation material and (5) the problem of achieving specifically directed air movement in refrigeration and atmospheric purification in storage rooms.

In the commodity fields, in addition to those already mentioned, considerable attention has been devoted to the projection of new or extended investigations of refrigerated storage for such commodities as brown rice and rice bran, hops, flaxseed, cottonseed, and seeds generally, dates, turkeys, alfalfa meal, fertile shell eggs for hatching, spices, floricultural products, celery, onions, lemons, fish, cereal products, canned foods as a class, and finally such uncommon products as caladium, taro, water caltrap and water chestnut.

Other phases of the report covered Short Term Investigations, technical services of the Foundation, regional conferences and government services.

Another valuable section of the report is used for an extended bibliography of articles, research reports, fact file sheets issued by the Foundation offices which represent a vast amount of information.

Touching on subjects outside the annual report, Dr. Diehl announced that a friend of the Foundation who had come to know the high value of its accomplishments had discussed with him informally the subject of leaving a considerable legacy to the Foundation, half of which would be to set up fellowships for research in food technology.

Humidity Measurement at Low Temperatures

At the afternoon session a progress report on the research on Humidity Measurement at Low Temperatures being conducted at Northwestern University under the sponsorship of the Foundation, was presented by B. H. Jennings. Prof. Jennings explained that this investigation was started in 1945 but conditions in the post-war period made it necessary to defer active work until late in 1947 but since then active work has been carried on.

This, he explained, is fundamentally research seeking an answer as to how to establish and hold and control desired humidity conditions at certain temperatures. Much of this, he explained, had to be original research work because, although methods of determining temperature and humidity conditions are already established, no low temperature humidity background information is now available.

This report proved to be very interesting and at its conclusion a number of comments were made and questions answered. Among the points mentioned were that if high humidity could be obtained, something above 90 per cent, and this humidity held at a constant figure, the products could then be frozen and held at a temperature of around zero instead of down to about minus 20 F.

Membership Business

Following this discussion, under the heading of Membership Business, a comment was made by one of the members that although the Refrigeration Research Foundation has grown scientifically, it has not attracted the attention it should from the industry. To encourage a larger and more representative attendance at annual meetings, it was suggested that arrangements be made to hold the next annual meeting on the day preceding the opening of the national convention of the National Association of Refrigerated Warehouses.

Commenting on the contribution of knowledge made by the Foundation, Harlan Nissen, past president of N.A.R.W., suggested that the idea of a legacy to the Foundation mentioned by Dr. Diehl could well be emulated by others.

Contribution Announced

Responding to this suggestion Vallee O. Appel of Chicago, retiring president, announced that as an expression of appreciation for what the Foundation had done for him, he was making a personal contribution of $1,000 to the Foundation.

Board of Governors

Members of the Board of Governors representing the Warehousing Industry and to serve for a three-year term expiring in 1953 were elected as follows: C. D. Castleberry, Atlantic Co., Atlantic, Ga.; E. G. Erickson, Central Cold Storage Co., Chicago; H. A. Gross, Booth Cold Storage Co., St. Louis; Paul V. Henningsen, Northwestern Ice & Cold Storage Co., Portland, Ore.; J. P. Johnson, Terminal Refrigerating & Warehousing Corp., Washington, D. C.; Philip G. Kuehn, Wisconsin Cold Storage Co., Milwaukee, Wis.; Allen Rushton, Birmingham Ice & Cold Storage Co., Birmingham, Ala.

Executive Committee Meets

At its first meeting the new Executive Committee approved financial aid to one new project, on storage of crab meat, to be initially conducted at the College Park Laboratory of the Fish & Wildlife Service, U. S. Department of Interior, College Park, Md., and continuation grants on 14 existing major projects as well as funds for short-term investigations. Total appropriated for at this first meeting for these purposes was $20,000.

Other activities of the Foundation were approved and commended for continuation. These include general collaboration of the Director with other related industries in technical programs, the monthly service bulletin to members, and other service activities of the Foundation.

Getting Ready for Dairy and Poultry Convention

These pictures of Jane Adams are proof enough that all chickens in a cold storage room are not necessarily frozen. Jane who is currently appearing in the motion picture "Master Minds" is checking the storage space with two committeemen, Harlan Nissen, vice president and general manager, Terminal Refrigerating Co., Los Angeles and past president of N.A.R.W., and Harry Rice of the Pacific Dairy and Poultry Association, in preparation for the national convention to be held in Los Angeles March 11 through March 14. The pictures were taken in the Terminal Refrigerating Co. plant at Los Angeles, the top in a conventional cooler room and the bottom in a tunnel blast freezer with the air "on." Jane, as Miss Pacific, is preparing to greet the conventionites.

Protection From High Pressure Is Worth While In Refrigerating Systems

By B. J. George, Professional Engineer
Kansas City, Mo.

REFRIGERATION systems, with the exception of the smallest, should be and usually are equipped with pressure safety devices to protect life, limb and property against the possibility of excess pressures. They may operate by relieving the pressure or by limiting the pressure. Yet, it is strange that many plant operators do not attach sufficient importance to those devices, and often barely know that they have them on their plant equipment.

Only recently, the author received a call from the master mechanic's office of a packing plant. The party calling wanted to know what should be done about inspecting, testing and maintaining the pressure safety devices on their refrigeration system. On further inquiry, it appeared that for several years, at least, no one had given any thought and attention as to whether such devices were in order and functioning. And that in spite of the fact that the proper operation of the safety devices on a refrigeration system is as essential as for those on a steam boiler.

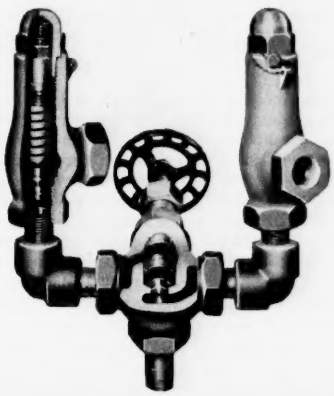
As a consequence of the call, and somewhat out of curiosity, I recently made inquiry of a large number of plant superintendents and operating engineers concerning their policies on installation, inspection and care of such safety devices. From the investigation I can only conclude that Lady Luck has been with many of them. Some were only slightly familiar with such devices, one or two said that they never bother about them unless the insurance or the city inspector made some complaint, while the routine of others varied widely.

Inspections and Tests

A few make regular inspection and tests every three or four years, and two make it a practice of keeping on hand extra devices or parts for use in times of emergencies and when overhauling those normally in service. The advocates of the "let it alone" policy feel that since valves are difficult to reseat properly, it is best to let them alone. Yet, at the same time, they admit that in their own opinion they have no assurance that the valves will operate safely after being let alone for a long period. Many of those interviewed were not familiar with the requirements of their local city code, which in the case of Kansas City, Missouri, for the most part, are identical to the American Standard Safety Code for Mechanical Refrigeration—with which they were equally unfamiliar.

One operating engineer, when asked about his pressure limiting device, remarked in effect that he merely tripped the high pressure cut-out switch now and then to make sure that it would trip off the motor, but he admitted that it had never occurred to him to test out the pressure part of the device to make sure that it would operate the switch when the pressure for which it was set was reached. This could be done easily by reducing the condensing water temporarily and noting the pressure at which the compressor motor is removed from the line. Accurate gauges, it hardly needs be said, are needed when making such tests, since an inoperative or inaccurate gauge may lead to wrong conclusions and trouble. Some operators use the same method for determining whether the pressure relief device will operate at its presumed setting, but often the valves will not reseat properly, thus necessitating an overhaul. In the case of valves which have been neglected, perhaps it is better to be forced to do an overhaul than to have an accident later.

A convenient arrangement for checking high pressure cut-outs was described by Holbrook. It consists of a small pipe reservoir located behind the gage board. With the necessary valves it is attached to the high pressure gage and pressure switch. Condensation, which is always present in the reservoir may be heated to run up pressure and indicate on the gage the operating point of the disconnect (See ICE AND REFRIGERATION, Feb. 1948, page 43 or Operating Data Book, 1948, page 23).



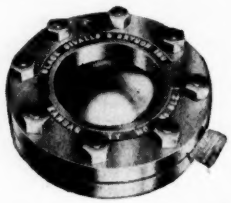
Dual pressure relief valve assembly contains a two way stop valve. One relief valve can be stopped off for maintenance or adjustment but in this case the connection to the other one is always open. This is the only type of stop valve permitted ahead of a relief valve.—Photo, Rex Engineering & Sales Co.

However, in the better operated plants the engineers make regular inspections to see that the safety devices are properly installed, that they are not leaking, badly corroded, or have not been damaged mechanically, and in one or two cases the shops are equipped to disassemble, overhaul, reset, test, and reseal the pressure relief valves before reinstallation . Once a pressure relief valve operates or shows signs of leaking (usually determined by the temperature of the pipe on the discharge side of the valve), they completely overhaul it, feeling that only in that way can they be assured of proper operation. Others, equally careful, either send the device out locally or back to the factory to be placed in first-class condition for reinstallation.

Great divergence from the standards was met, particularly as to three of the code requirements, namely, (a) against placing valves between the pressure vessels (such as receivers) and the pressure relief devices, (b) provision of two pressure relief valves in parallel, or of one pressure relief valve and one rupture member in parallel, and (c) that the discharge from relief devices for plants con-

taining in excess of thirty pounds of refrigerant be vented to the outside of the building in an approved manner.

Some operators object to the rupture device as being wasteful of refrigerant in case of a break. Others feel that if they do not have a hand-operated valve between the pressure relief device and the pressure vessel, they cannot shut off the escaping refrigerant and quickly install a replacement device. Many operators justify the lack of vents to the outside on one of two grounds. Some say that if the device is vented to the outside air, they cannot tell when the device operates or when it is leaking, thus leading to the possibility of costly losses of refrigerant.



A safety head with replaceable rupture disc. It provides inherent protection or may be used in connection with a relief valve. Photo—Black, Sivalls and Bryson, Inc.

The answer, of course, we believe, is in normal attention to the actual operating pressures from time to time throughout the operating period, plus proper inspection of the devices to determine whether they are permitting the refrigerant to leak past the valve seats. Others find that outside vent pipes, exposed to the weather as they likely will be, will give trouble from corrosion of the valve due to rain, melting snow or ice, and condensation running down the inside of the pipe and causing failure of the device to operate at its rated setting. This danger, of course, can be serious, and may be lessened by careful design and installation of the vent piping layout.

In one case, a valve between the safety device and the receiver was found to be closed—"to avoid the possibility of discharging ammonia into the plant and the loss of liquid." Little thought had been given to what the rupture of the vessel might have done in case the pressure limiting device failed to trip off the motors, say in case of the failure of the condensing water supply. In another case, the hand valve was open but the handwheel had been removed, thus "making it more difficult, or at least more inconvenient for anyone unintentionally to close the valve" and thus make the safety device inoperative. Still, the valve could be closed, and that is one of the hazards which the safety standards anticipates and seeks to avoid.

Experience Proves Requirements

One need not spend much time telling operators what may happen in case the refrigerant is discharged into the engine room. A few years ago, a gauge glass on the receiver in an ice plant was broken, and the only way in which the operator could close off the flow was by being protected by a stream of water on his head and face from a hose, and even then it was difficult since his gas mask was useless in the gas concentration which exisited.

There is on the market, for use on pressure vessels, a twin pressure relief valve assembly which provides for normal operation of one valve, and in emergencies the operation of the two-way hand valve disconnects it and connects the second valve, thus assuring that while one valve is being inspected, overhauled, and reinstalled, the vessel will be protected by the other. With the device it is impossible to disconnect the one by use of the hand valve without connecting the other. With a vent to the outside, the operator safely can make the changeover. It enables the loss of refrigerant to be kept at a minimum while providing a maximum of safety under the code requirements.

Fortunately, pressure relief devices on modern compressors discharge into the suction side of the compressor and piping, so there is no problem of disposing of the vented gas or liquid. By feeling of the discharge side of the valve (the low side of the system, of course) the operator may determine whether the valve is leaking, since the temperature difference usually is very marked in the case of a leaking valve or in the case of one that has just operated due to high pressure or breakdown of the valve.

The setting of pressure limiting devices—the ones that trip off the motors in case of excessive pressure—should be the first line of defense when high pressure begins to show up. They should be set below the setting of the pressure relief devices, yet not so low as to cause frequent and unnecessary shutting down of the equipment. It that happens, check the cause of high pressure, remove the cause if possible, but in no case merely arbitrarily increase the setting of the pressure limiting devices, since to do so is to invite real trouble. From the temperature and pressure readings of the system, taking into account the outside temperatures and humidities during the summer, as well as the temperature-pressure relations of the refrigerant as taken from standard tables, one can determine whether the setting is what it should be.

Protective Devices Justified

We make no claim to be an expert on the subject of pressure safety devices, but we do believe that safety devices are very important and that the matter of the extent to which good safety practices are to be observed in a given plant should not be left to the whims of the individual operator. Nor should the fact that the insurance inspectors, or the city or other local inspectors, may be lax, lead those responsible for the safety of life, limb and property to become careless or indifferent to the necessity for proper installation, inspection, test, and repair and maintenance of all safety devices throughout the plant. The fact that pressure safety devices seldom, under normal operating practices, are required to operate is no justification for carelessness and neglect which may be almost criminal in results.

We suggest that every plant superintendent and every plant engineer have available and be familiar with the American Standard Safety Code for Mechanical Refrigeration* and with the local, state and city codes pertaining to the subject. Further, we recommend that plants be inspected thoroughly in the light of those requirements, so that every effort can be made reasonably to follow them.

In the meantime the following few condensed excerpts from the A.S.A. Safety Code mentioned before will enable the plant operator to gain some idea as to whether his plant meets their requirements as to pressure safety devices. This code is being revised but it is not expected that the basic requirements will be greatly altered.

Design Working Pressure — The maximum allowable working pressure for which a vessel is designed.

Pressure Limiting Device—A pressure responsive mechanism designed automatically to stop the operation of the compressor at a predetermined pressure.

Pressure Relief Device—A valve or rupture member designed automatically to relieve excessive pressure.

*A.S.A.-B9-1939 American Standards Assn., 70 E. 45th St., New York 17, N. Y.

Pressure Relief Valve—A valve held closed by a spring or other means and designed automatically to relieve pressure in excess of its setting.

Pressure Vessel—Any refrigerant containing receptacle of a Refrigerating System other than expansion coils, headers, and pipe connections.

Rupture Member—A device that automatically will rupture at a predetermined pressure.

Pressure Relief Devices—Each pressure vessel containing liquid refrigerant and which may be shut off by valves from all other parts of a refrigerating system, shall be protected by an approved pressure relief valve in parallel with a rupture member or a second approved pressure relief valve if its gross volume exceeds five (5) cubic feet unless its diameter does not exceed six (6) inches.

Each pressure vessel having a gross volume of five cubic feet or less, containing liquid refrigerant and which may be shut off by valves from all other parts of a refrigerating system, shall be protected by an approved pressure relief device or an approved fusible plug.

Compressors operating above fifteen (15) pounds per square inch gauge and having a displacement exceeding one hundred (100) cubic feet per minute shall be equipped by the manufacturer with a pressure relief device of adequate size to present rupture of the compressor, located between the compressor and stop valve on the discharge side. The discharge from such relief device may be vented to the atmosphere or into the low pressure side of the system.

Capacity Rating—The Code sets up the capacity required in the relief valve and a formula for calculating the minimum capacity.

Pressure Setting—All pressure relief devices for refrigerant containing vessels shall be directly pressure actuated.

All pressure relief valves for refrigerant containing vessels shall be set to function at a pressure not to exceed 25 percent above the Design Working Pressure of the vessel.

All rupture members used in parallel with pressure relief valves on refrigerant containing vessels shall be set to function at a pressure not to exceed 90 percent above the Design Working Pressure of the vessel.

Pressure Setting Test—The pressure setting of relief devices for refrigerant containing vessels shall be tested with the outlet open to the atmosphere and the relief device shall function at a pressure not more than ten (10) percent above the pressure marked thereon, if such marking is one hundred (100) pounds per square inch or more, or, at least at not more than ten (10) pounds per square inch above the pressure marked thereon, if such marking is less than one hundred (100) pounds per square inch.

Marking—The code provided for marking and sealing of the pressure relief valves and the placing of other information thereon by the manufacturer; also provision for marking of rupture members by the manufacturer.

Installation Requirements—A rupture member may be located between a pressure relief valve and a pressure vessel.

All pressure relief devices shall be connected as nearly as practicable directly to the pressure vessel or others parts of the system protected thereby, and shall be placed above the liquid refrigerant level.

Discharge from Pressure Relief Devices—Pressure relief devices and fusible plugs on all systems containing more than thirty (30) pounds of refrigerant, except those used to protect compressors, shall discharge to the outside of the building in an approved manner.

The size of the discharge opening and pipe from the pressure relief device shall not be less than the size of the relief device inlet. The Code also provides for a common vent header and gives a table of capacity of discharge piping. It also provides for discharging ammonia into tanks of water of specified capacity and construction. Also, for discharging sulphur dioxide into absorptive brine under specified conditions.

Pressure Limiting Devices—Pressure limiting devices are required on all systems containing more than twenty (20) pounds of refrigerant and operating above atmospheric pressure, and on all Water Cooled Systems so constructed that the compressor or generator is capable of producing a pressure in excess of the test pressure.

Pressure limiting devices shall stop the action of the compressor at a pressure less than ninety (90) percent of the relief device setting but not more than ninety (90) percent of the test pressures given in Table 3 set out in the Code.

High pressure relief valve, cut away to show the features of construction. Photo from Henry Valve Co.

Pressure limiting devices shall be connected between the compressor and the stop valve on the discharge side.

The Safety Code contains many valuable data and much other information which should be studied by those responsible for plant operation.

The author of this article should like to invite comments and suggestions as to practical methods used in the routine operation and maintainence of pressure safety devices in refrigeration plants, for his recent experience has indicated that many take the devices for granted. Familiarity breeds contempt; contempt may breed destruction of life, limb and property. You may be next!

British Institute of Refrigeration Secretary Retires

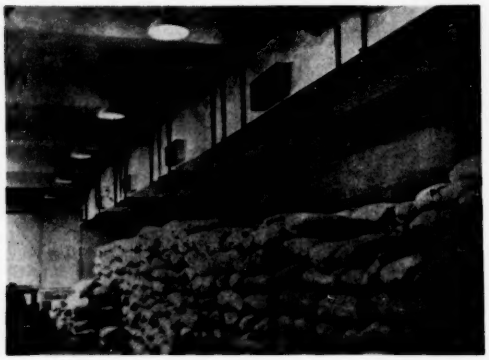
AFTER a full half-century of active connection with the Institute of Refrigeration of Great Britain, Joseph Raymond has retired as honorary secretary. At a meeting of the executive council of the Institute held in November, he was unanimously elected a vice-president and secretary emeritus.

Mr. Raymond attended the first meeting of the Institute held December 11, 1899. On the retirement of the late R. M. Leonard, the founder, in 1910, Mr. Raymond became secretary and in the intervening years has been associated with many important movements making for the progress of refrigeration in Great Britain. He has been the editor-proprietor of Modern Refrigeration, formerly known as the Cold Storage and Ice Trades Review, since 1913.

His place as secretary has been taken by David Thomas Lee who is also secretary of the National Federation of Cold Storage & Ice Trades.

Food Plant in India Modernized—Refrigeration Has Vital Part

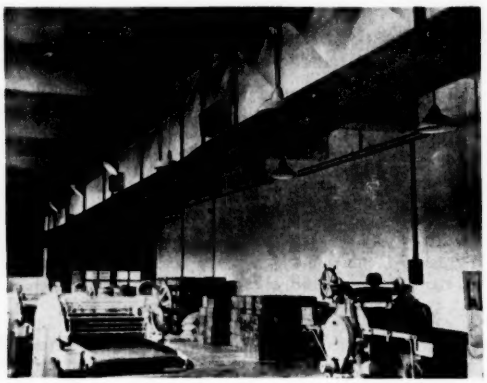
SOME months ago when Prime Minister Nehru came to the United States he made it plain that his plans for New India included not only the adoption of certain American democratic processes, but also the advanced techniques of American Industry. He emphasized that while 70 per cent of his countrymen live off agriculture, Indian cities, such as Bombay are now being modernized, with industrial leaders vying with civic authorities to lift the social and business standards of their re-vitalized country.



This is the raw material storeroom of the Shangrila Food Products Ltd., Bombay, India, showing the duct layout and flour bags stored to prevent weeviling.

One of the business leaders of Bombay, with its population of 1,500,000 and a tropical climate, is Rajah Bahadur Narayanial Banistal, chairman of Shangrila Food Products, Ltd. Under his direction, the Shangrila factory, more than 700 feet long and with 36,000 square feet of working space, has been modernized so that today it has one of the largest outputs of any food plant in India. Its annual output is 2000 tons of food products, mostly quality biscuits. A cutting and embossing machine cuts and embosses 1900 to 2500 biscuits a minute. The biscuit oven is 180 feet long and it bakes biscuits in as little as 4 minutes.

Refrigerating equipment has been installed in the plant to control temperature and humidity in the various departments of the factory; to provide low temperature storage for perishables and milk products; to provide refrigeration for creaming tunnels, and cool drinking water for emloyees.

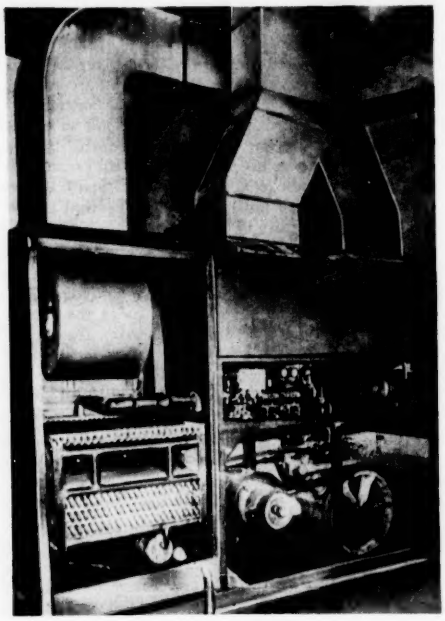


This is the cutting and embossing department of the Shangrila Food Products Ltd., Bombay, India. 88,700 cubic feet of space are air conditioned here.

In the cooling and packing department of the Shangrila factory 122,000 cubic feet of space are air conditioned providing constant temperature. Motorized dampers control the humidity. While flour is the main ingredient of biscuits, there are many others, including butter, vegetable fats, sugar, milk glucose, malt extract, semolina, bran olden syrup, amonium, bicarbonate, tartaric acid, cream of tartar, essential oils, vanilla, dessicated coconut, chocolate and coloring. It is obvious therefore that proper air conditioning is vital to the successful operation of the company.

Refrigeration Units

In the creaming tunnels there are two automatic refrigeration units of three tons each. In the fat preparation, dough mixing, cutting and embossing section, a close control of temperature and humidity insures unvarying quality of biscuits. Low temperature cold storage provides 26,000 cubic feet of space for such perishables as butter, vegetable fats, egg pulp and milk products. The installation, comprising six tons of refrigeration, is designed to maintain automatically any temperature within a range of of 10 to 45 F.



Here is one of the two three-ton refrigerating units manufactured by the United States Air Conditioning Corpn. used in the cooling and packing department of the Shangrila Food Products, Ltd., Bombay, India.

There are 40,000 cubic feet of air conditioning space for storage of raw materials serviced by two air conditioners each supplying 25 tons of refrigeration. Hundreds of bags of flour are stored here and the temperature must be right to prevent weeviling.

Institute of American Poultry Industries Fact Finding Conference

SHIFTS and changes in poultry and egg production and marketing, new ideas on plant efficiency, mass broiler production, enlarged markets for poultry, consumer preferences for eggs, procurement, were a few of the more important subjects discussed at the Fact Finding Conference of the Institute of American Poultry Industries. The conference was held in Kansas City, Mo., February 11-14.

Shifts in Production and Marketing

The big shifts and changes in poultry and egg production and marketing during the last five or ten years, and in sight during the next decade, were brought into focus by a panel of three marketing analysts, representing the Midwest, East and West.

Analyzing the picture in the Midwest, it was pointed out that: (1) egg production in the Midwest has not declined nearly as much as anticipated back in 1945 and 1946; (2) the general belief that midwestern eggs have lost ground in eastern markets recently, is not supported by statistics; (3) the Midwest's heavy egg volume moving in commercial channels may have been redistributed among different types of distributors; (4) Sideline farm flock poultry is decreasing; (5) commercialized poultry production, of a sideline nature at first and full-time operation later, is expected to increase.

Characteristic of the East, it was pointed out that: (1) direct marketing, which increased during the war, has declined; (2) the Eastern commercial broiler industry absorbs about ten million eggs a week; (3) the Northeast will continue to be a market for the Midwest and other sections and may never even approach self-sufficiency; (4) Northeastern producers will continue to aim at top quality markets; (5) Northeast broiler production will not decline.

The following changes and trends in western states were cited: (1) population has increased, while poultry and egg production has changed little, so more of the chickens and eggs consumed are being imported and a smaller proportion of the West Coast turkey crop is moving East; (2) there should continue to be a place for a large volume of midwestern eggs for the next few years: (3) in the production and marketing of Grade AA eggs, midwestern producers probably will not be able to compete with local western growers; (4) Southern California's climate is well suited to an expansion of commercial broiler production; (5) it appears that more and more growers in the West are trying to raise some, if not all, of their feed requirements, which will put them in a better position to compete.

Cost Cutting Through Plant Efficiency

A new type of short course in cost cutting, in the form of plant efficiency, was presented by Fred Downs, of York Corporation, Omaha, as one of the speakers in a clinic on that subject. The first six weeks of the year, he pointed out, is the time to check refrigeration units to bring them up to maximum efficiency. This is the "in-between" season for poultry and egg processors, following holiday poultry dressing operations and preceding the start of egg breaking operations. This is the time to examine compressors, clean condensers, drain oil from evaporators after they warm up, check brine systems for strength and alkalinity, and adjust automatic equipment for correct operation.

He called particular attention to the fact that dirt is expensive: grit on moving parts means friction and friction induces rapid wear and deterioration. A firm believer in the value of "prevention ounces" vs "pound cures", he outlined detailed instructions for overhauling and checking compressors, controls, compressor drives, condensers and evaporators. Following the practices recommended by Mr. Downs should help many processors eliminate costly replacements and service repairs which so often result from neglect or careless maintenance.

Poultry Packing Problems

Important points established during a panel discussion of poultry packing problems included: (1) warm evisceration is practical and efficient, provided you don't have to build up a backlog to keep the line running; (2) bacterial counts can be held down with reasonable sanitation and care of equipment; (3) modern and improved wax defeathering is expanding; it is efficient in large plants, particularly those handling broilers, when it is used effectively; it is expanding rapidly in plants processing ducks and geese; (4) agitated slush ice cooling seems to be the most practical way of bringing about a quick reduction in body temperature.

Specialized Broiler Production

The growing broiler industry was discussed by J. R. Redditt. He presented historical and current data from the seven large commercial broiler areas now issuing weekly reports in chart form. Comparing 1940 to 1950, he noted the following changes: fewer breeds, more cross breeding, larger broods, more broods per year, improved feeding efficiency and shorter growing period. Gains in processing and evisceration have also kept pace with gains in production.

In addition to the large broiler areas reported, Redditt pointed out, many other sections are growing commercial broilers. Some of these are expanding, and probably at a rate equal to the fastest growth reported. States showing marked interest in increased broiler production include Maine, 10 million; Missouri 10-12 million; Pennsylvania 20-25 million; West Virginia 15-20 million; Illinois and Indiana 10-12 million each; California 30-35 million; Mississippi 4-5 million; Nebraska 3-4 million; Colorado 2 million.

Along with variations in brooding, feeding and watering equipment and more or less helter-skelter growth of the broiler business, a new production trend is now being recognized. It's the big super-sized operation involving the use of modern labor saving equipment with which one man can now produce 50,000 broilers at a time and do this four times a year. At a profit of five cents, or four or even three, this type of operator can stay in business at a fairly good profit while the grower who produces only 50,000 a year will find the going tough, probably too tough.

Increased Poultry Consumption

Even though poultry consumption is much higher than it used to be, there's plenty of room for still greater increases, according to Howard A. Pierce, A & P Food Stores.

Consumers are eating about 25 pounds of poultry per capita per year, he pointed out. This is about six pounds more than the 1939 figure, but it is only one third of the increase in red meat consumption. And meat consumption per capita is running nearly three pounds a week, more than five and a half times the poultry consumption of one half pound a week. An increase of only one quarter pound per week could mean a 50 percent increase in the income of each meat chicken grower, and everyone in or associated with the meat chicken business would share accordingly. Quality is one of the outstanding factors affecting retail sales, he said, and the development of the specialized meat chicken industry has greatly improved quality and helped to increase sales.

(Continued on page 74)

Government Offers Dried Eggs for Sale for Export Only

AN INVITATION to purchase dried whole eggs for export only has been issued by W. D. Termohlen, director of the Poultry Branch, Production and Marketing Administration, U. S. Department of Agriculture. A recent amendment No. 3 makes new lower prices effective immediately; provides that offerings may be made on any business day of the week instead of on only one day and includes a revised list of the storage holdings being offered for sale.

Offers made on Form PY-49a (Revised) at a price of 40 cents per pound basis f.a.s. New York or New Orleans, either barrel-packed or carton-packed, will be considered daily. Sales will also be made on the basis of delivery at present locations to permit any repackaging or other processing; in which case the selling price will be reduced by an amount equivalent to the freight cost to New York or New Orleans, whichever is lower.

Producers of dried eggs will continue now to get about 96 cents a pound, although most of the 73 million pounds now owned by the government was purchased at a price of about $1.25 a pound.

Attached to the memorandum is a list of storage houses holding dried eggs and the amounts of their holdings, amounting to a total of 73,000,000 pounds. Following is a list of the storage houses and their holdings:

State, City and Warehouse	14 lb. Cartons (56-lb. Master Cases)	150-200 lb. Barrels
Illinois		
Bloomington, Manufactured Ice. Co.	317,688	474,185
Champaign, Smith and Co.	531,832	
Peoria, Peoria Service Co.		506,400
Indiana		
Fort Wayne, Sherman White & Co.		97,530
Indianapolis, Indiana Terminal Refrig. Co.	517,440	72,170
Iowa		
Burlington, The Heil Co.	35,112	306,660
Cedar Rapids, Hubbard Ice & Fuel Co.		220,280
Davenport, Kohrs Cold Storage Co.		244,780
Dubuque, Fischer Art. Ice & Cold Storg.		353,345
Kansas		
Atchison, Natural Cooler Storage	2,859,864	11,818,311
Emporia, Emporia Ice & Cold Stg. Co.	511,168	
Hutchinson, Carey Ice & Cold Storage	413,504	217,350
Kansas City, Midwest Cold Storage	59,920	525,590
Topeka, Beatrice Creamery Co.		73,110
Topeka, Railroad Ice Company	636,328	147,000
Topeka, Seymour Packing Company		522,480
Wichita, Kansas Cold Storage	381,696	579,775
Michigan		
Benton Harbor, House of David Cold Stg.	744,688	1,605,985
Detroit, General Cold Storage Co.		283,200
Detroit, Detroit Refrig. Warehouse		159,600
Detroit, Grand Trunk Warehouse Cold Stg. Co.	160,160	1,107,581
Detroit, U. S. Warehouse Company		217,350
Muskegon, West Mich. Dock Mkt. Whse.	764,792	1,917,550
Minnesota		
Duluth, Duluth Terminal & Cold Stg. Co.	529,144	2,090,485
Duluth, Northern Cold Storage Co.	290,190	2,306,980
Minneapolis, Booth Cold Storage Co.		130,560
Minneapolis, Merchants Cold Stg. Co.	33,600	590,510
Minneapolis, Minneapolis Cold Stg. Co.	382,984	1,795,750
St. Paul, Booth Cold Stg. Co.		709,470
St. Paul, Central Warehouse Co.	96,992	1,053,780
St. Paul, Miller and Holmes, Inc.	332,693	
Missouri		
Kansas City, Empire Stg. & Ice Co.	214,648	247,585
Kansas City Federal Cold Stg. Co.	238,560	539,260
Kansas City, U. S. Cold Stg. Co.	75,488	579,075
Springfield, Springfield Ice Refrig. Co.	1,319,920	
St. Louis, Crystal Ice & Cold Stg. Co.	47,712	
St. Louis, Federal Cold Storage Co.		233,560
St. Louis Merchants Refrig. Co.	702,800	291,900
Nebraska		
Beatrice, Beatrice Creamery Co.	261,856	330,750
Crete, Fairmont Foods Co.	73,248	218,750
Omaha, National Cold Storage Co.	718,144	559,555
Omaha, Omaha Cold Storage Co.	992,544	740,625
Omaha, C. A. Swanson & Sons	434,448	84,480
York, York Cold Storage Co.	886,928	283,500
New Jersey		
Jersey City, Harborside Whse. Co., Inc.	822,248	
Jersey City, Union Terminal Cold Storage Co.	672,224	
New York		
New York, Borden Co.	202,832	
New York, Bronx Refrig. Co.	331,016	
Ohio		
Cincinnati, Cincinnati Term. Whse. Co.		289,776
Cleveland, Distribution Term. Whse. Co.		249,375
Cleveland, National Terminal Corp.		189,000
Toledo, Great Lakes Terminal Whse.	616,728	637,775
Oklahoma		
Enid, Southwest Ice Dairy	163,674	96,600
Muskogee, Southern Ice Company		402,850
Oklahoma City, Big Four Storage	8,064	600,075
Shawnee, Shawnee Whse. Cold Stg. Co.	1,457,792	249,550
Tulsa, Tulsa Cold Storage Co.	1,622,208	
Texas		
Dallas, Alford Warehouse	703,696	949,500
Dallas Pure Ice & Cold Storage Co.	336,336	300,300
Dallas Southern Ice Co.	600,648	47,880
Dallas, U. S. Warehouse	96,096	
Denison, Southern Ice Co.	660,296	
Fort Worth, Southern Ice Co.	28,224	81,600
Forth Worth, Texas Ice Refrig. Co.	881,216	196,650
Sherman, Southern Ice Co.	551,880	
Wisconsin		
Green Bay, Atlas Whse. Storage		32,550
Milwaukee, Milwaukee Cold Stg.	506,128	985,790
Milwaukee, Terminal Storage Co.		495,540
Wausau, Wausau Cold Stg. Co.	226,352	479,345

Refrigerated Warehousing Industry

NEWS • ARTICLES • ANNOUNCEMENTS

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Division of American Warehousemen's Association

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Refrigerated Warehouses Offer Streamlined Service to Frozen Food Distributors

By Paul B. Christensen
Merchants Refrigerating Co.

THE cold storage industry has, for many years, realized that the quick frozen food industry is one of its principal customers. In keeping with that thought, warehouses all over the country have gone a long way toward trying not only to assist but to make it easier for the frozen food industry to operate. At the present time the most critical situation is with the frozen food distributor.

At the annual N.A.R.W. convention held in Chicago recently, the question of charges for withdrawals of frozen foods from refrigerated warehouses was cited as one of the problems that has arisen between frozen food packers and distributors; each claiming that these charges should be paid by the other. Although not based on that specific problem, this article from a recent issue of The New York Journal of Commerce does tell what refrigerated warehouses are doing to make it easy for both frozen food packer and frozen food distributor to do business with them.

The cost of distributing frozen foods, because of the fact that they must be kept under specially refrigerated conditions, is considerably higher than the cost of distributing other foods. This makes the competition of fresh fruits and vegetables rather stiff and anything that can be done to bring the distribution cost of frozen foods in line with that of other foods will materially help the competitive situation for the quick frozen foods.

Helping the Distributor

The cold storage warehouses have so far gone a long way toward helping the distributor of quick frozen foods. Many warehouses have remodeled space to allow the distributor to locate in the warehouse thus enabling him to be directly adjacent to the stockpile of his materials and save the additional cost of trucking from warehouse to distribution point. In fact, many warehouses have spent large sums of money in the reconstruction of their buildings in order to accommodate frozen food distributors.

The majority of warehouses have now studied the materials handling problem so that they can handle all foods more economically and pass the savings on to the customer. The advent of fork trucks and pallets has materially helped the warehouse industry in this respect. Some warehouses, of course, have been unable to adapt palletization to their buildings, but the study of their materials handling problem has very often benefited them and made them more conscious of the costs of handling so that even though they have been unable to palletize they have been able to effect other economies.

New Warehouses

In several areas where there was a shortage of refrigerated warehouse space the operators have invested large sums of money in building new warehouses and these have been designed particularly to accommodate the frozen food business. The possibility of constructing new warehouses in most locations is extremely remote however, because of the terrifically high cost of construction today plus the fact that warehouse storage charges have not increased enough to compensate for higher construction costs.

Some frozen food packers have recognized the problem of their distributors and many packers are now stockpiling in warehouses for the distributors so that the latter need not tie up their money in warehouse stock but can draw directly from the packer's stock in the warehouse and pay as they draw merchandise. Most packers who are going to this method of sale are taking their costs delivered in the distributor's city, adding an average of six months of warehouse charges to this f.o.b. cost and the final figure is the sale price to the distributor.

The distributor can then use his entire capital for the actual sales effort, breakup operation and delivery operation.

This seems to be the current trend in the handling of quick frozen foods, and the three segments of the industry —the packers, the warehousemen and the distributors—are working together along the same lines for economy. It looks as though the year 1950 is going to be a banner year for the quick frozen food industry. The cold storage warehouse industry is indeed proud to have such an important part in the business of distributing quick frozen foods.

Cold Storage Advisory Committee Reviews Research Projects

COORDINATION of research on the use of low temperatures to preserve the quality of farm products was emphasized at the recent meeting of the Cold Storage Advisory Committee. The Committee, established under the Research and Marketing Act of 1946, held its third annual meeting in Chicago January 25 and 27 in conjunction with meetings of the Refrigeration Research Foundation.

Dr. Barnard Joy, executive secretary of the Committee, represented the USDA Research Administrator in reporting activities under the RMA since administration of the Act was transferred to the administrator's office last August. A review of RMA projects now under way showed that 18 were of direct interest to the Cold Storage Committee and that 64 additional projects had aspects of interest to the Committee. Only the more important of these were discussed.

The Committee expressed general satisfaction with the results to date on preparation of precooked frozen foods, behavior of oranges in terminal storage, preparation and preservation of frozen milk and cream, effect of storage temperatures on the cooking quality of potatoes, methods of cooling fresh fruits and vegetables before shipment to market, the place of frozen food locker plants in the processing and distribution of meats, and determination of most feasible methods of collecting and disseminating market information on frozen foods.

In its recommendations for new research, the Committee gave top priority to a recommendation made at previous meetings: That a national low-temperature laboratory be established and staffed with outstanding scientists who would work on the basic principles of thermodynamics, heat transfer, and effects of ice formation on foods. Three other recommendations for research on problems that are related to a wide variety of commodities were: Distribution and movement of air in refrigerated warehouse rooms and its relation to engineering and operating problems; efficiency and cost of various packaging materials and methods used in locker plants for storage of frozen foods; and effect of air velocity on quality of various refrigerated commodities.

Temperature for Lemons

High priority was given to the need for determining the temperature and other conditions required for improved storage of lemons at terminal markets. Similar work recently completed on oranges has indicated the possibility of expanding consumption of fresh oranges by lengthening the marketing season for them. Other individual-commodity problems on which research was recommended include: Prevention of loss of quality in shell eggs in storage and marketing due to present methods of washing eggs; possibility of expanding the market for milk and reducing its cost to consumers by the development of frozen milk concentrate; and the effect of processing methods on the appearance and quality of frozen poultry, particularly frozen turkeys.

The Cold Storage Committee urged appropriate commodity advisory committees to give consideration to these and several other commodity problems in making their recommendations and indicated its willingness to receive recommendations from commodity committees relating to use of low temperatures in the preservation of agricultural products.

The Committee also recommended research on temperature and other conditions required for the improved storage of shell eggs, seeds, alfalfa meal and other feeds, canned fruits and fruit juices, dried eggs, dried and evaporated milk, and floricultural products.

Paul B. Christensen, vice president of the Merchants Refrigerating Co., New York, served as chairman of the Committee. Other members in attendance were V. O. Appel, president, Fulton Market Cold Storage Co., Chicago; A. R. Current, City Ice & Fuel Co., Chicago; H. C. Diehl, director, Refrigeration Research Foundation, Berkeley, Calif.; A. J. Hampson, treasurer, Merchants Cold Storage and Warehouse Company, Providence, R. I.; J. C. Irwin, vice president, United States Cold Storage Co., Kansas City, Mo.; C. A. Martin, president, Polar Cold Storage, Inc., Nashville, Tenn.; H. J. Nissen, Terminal Refrigerating Company, Los Angeles, Calif.; S. C. Rogers, G. H. Hammond Co., Chicago; and H. W. Wilson, president, Quaker City Cold Storage Co., Philadelphia, Pa. Committee member Walter F. Henningsen, president of the Northwestern Ice & Cold Storage Co., Portland, Ore., was unable to attend because of illness.

Others meeting with the Committee and contributing to the program were H. J. Reed, dean and director of the School of Agriculture at Purdue, representing the Agricultural Research Policy Committee; W. T. Pentzer and Paul L. Harding of the Bureau of Plant Industry, Soils, and Agricultural Engineering; H. W. von Loesecke of the Bureau of Agricultural and Industrial Chemistry; J. W. McKinsey, University of Missouri; and S. T. Warrington, secretary, National Frozen Food Locker Association.

Dried Eggs and Nonfat Dry Milk Solids Made Available for Donation

THE Production and Marketing Administration of the U. S. Department of Agriculture has announced that surplus stocks of dried eggs and nonfat dry milk solids acquired by the Commodity Credit Corporation under price-support programs have been made available for distribution to various Federal agencies and for donation to School Lunch programs, the Bureau of Indian Affairs, and Federal, State, and local public welfare agencies for the assistance of needy persons in this country, in accordance with Section 416 of the Agricultural Act of 1949.

This makes a total of three surplus commodities now offered free of cost to school lunch programs and to domestic public welfare agencies under Section 416 provisions. In an announcement of January 17, potatoes in unlimited quantities were made available to all eligible agencies, whether in this country or abroad. Under today's announcement, availability of dried eggs and nonfat dry milk solids is limited to the first donation priority which is set forth in the Act.

Except for quantities acquired under the current 1950 price-support programs, total uncommitted CCC stocks of dried eggs and nonfat dry milk solids, amounting to about 73 million pounds and 169 million pounds, respectively, are being made available.

These quantities will be offered free of cost to eligible agencies, at point of storage. In accordance with the provisions of Section 416 of the Agricultural Act of 1949, the welfare agencies receiving the commodities will be required to pay shipping and handling costs from the storage points. They must also agree to distribute the commodities only to those whom the agencies determine to be eligible under approved program outlets, and to agree not to reduce their expenditures for food because of the receipt of the donated commodities.

Refrigerated Warehousing Industry

Poultry Advisory Committee Meets — Reviews Research Work

AT a regularly called meeting of the Poultry Advisory Committee with U. S. Department of Agriculture officials on January 30-31, progress under the Department's poultry research and service program was discussed, with particular reference to work under the Research and Marketing Act.

While generally approving all projects now under way to improve the production, utilization, and marketing of poultry and poultry products, the committee urged that certain phases of this research be intensified or expanded to the extent that funds will permit. Problems considered especially in need of attention included the following:

1—There is a special need, the committee agreed, for research aimed at developing mechanical or electronic methods for candling eggs to determine more accurately than is now possible, their interior quality.

2—How can the quality of eggs at the market place be improved? The committee emphasized the importance of producing clean eggs and suggested further study to determine how to wash dirty eggs so that quality will be affected the least adversely. Members of the group pointed out that evidence has indicated that eggs that have been laid in a clean nest and kept clean from then on maintain better quality than washed eggs. They agreed, however, that more conclusive tests are required.

3—What can be done to improve the care and handling of poultry and eggs in retail stores? In this connection, the committee recommended that the experimental retail training courses, which so far have applied only to fresh fruits and vegetables, be extended as soon as possible to the training of retailers in better methods of handling and merchandising poultry and eggs.

4—How can the transportation of farm products be improved? In this field, the committee recommended that special effort be made to do original research and test new equipment and methods that will reduce transportation costs and provide better service.

5—The committee commended highly the work that has been done to report chick movements and broiler marketings in certain commercial areas and recommended that this project be expanded as a regular service to commercial poultrymen throughout the country.

6—The committee expressed the need for additional information about consumer preferences for eggs in such matters as quality, size, cleanness of the shell and color. They accordingly recommended that the consumer preference studies now being conducted under the RMA be extended to eggs.

The committee also strongly recommended that work now under way to develop improved microbiological methods for determining the quality of eggs and egg products be expedited in view of the consideration being given to the establishment of standards for eggs and egg products by regulatory agencies.

Fifty Years a Warehouseman — G. Dudley Allman Honored at Testimonial Dinner

PRELIMINARY to the convention of the National Association of Refrigerated Warehouses which opened January 30 in the Edgewater Beach Hotel, Chicago, about 140 leaders in the industry from all corners of the country gathered Sunday evening, January 29 to pay tribute to

G. D. Allman

G. Dudley Allman, recently elected chairman of the board of the United States Cold Storage Corp. The occasion was a cocktail party and dinner arranged by the Chicago cold storage group to honor Mr. Allman's half century of service in the cold storage business.

Only a few men have remained continuously active in the industry for so many years. He started at the age of 16 as an office boy for the Union Cold Storage Co., Chicago, then became manager of the Chicago Cold Storage Co., and then was manager, vice-president, president and chairman of the board, United States Cold Storage Corp. He has served as president of the National Association of Refrigerated Warehouses and of the American Warehousemens Association.

As master of ceremonies, Vallee Appel of Chicago made appropriate remarks, telling about the services rendered the refrigerated warehousing industry by Mr. Allman. Other speakers were Col. Paul Logan, secretary of the National Restaurant Association; Clement Johnston, president of the American Warehousemens Association; Wesley Howell, past president of the American Warehousemens Association; Arthur N. Otis, president of the National Association of Refrigerated Warehouses; Harlan J. Nissen, past president of the National Association of Refrigerated Warehouses and the American Warehousemens Association; E. M. Dodds, president of the United States Cold Storage Corp.

As tangible expressions of esteem Mr. Allman was presented with a set of ruby cuff links and studs and at the Wednesday luncheon session of the National Association of Refrigerated Warehouses, he was made an honorary member of N.A.R.W., the citation reading as follows:

"George Dudley Allman, effective and loyal leader of the warehousing industry for over half a century; formerly president of the National Association of Refrigerated Warehouses; past president of the American Warehousemens Association; a founder and officer of the Refrigeration Research Foundation; distinguished for an ever unselfish devotion of time, means, thought and energy to the progressive development of the art of warehousing; universally accepted as the dean of the industry of refrigerated warehousing."

Storage of White Potatoes

IN A TRRF-aided project at the Nebraska Agricultural Experiment Station (TRRF No. 12) storage temperature was shown to be a factor in retention of vitamin C (ascorbic acid) in white potatoes. It was found that they lose the least vitamin C when stored at 50 to 70 F. As temperature is lowered from 50 to 40 F. the loss increases. The period of relatively high ascorbic acid content can be prolonged a number of weeks by storage at 50 to 60 F. during the first 12 to 16 weeks with use of 40 F. only as early as may be necessary to retard or prevent sprout growth. (H. O. Werner and Ruth M. Leverton, American Potato Journal, July 1946.)

The conclusions above parallel those of R. C. Wright and T. M. Whiteman (American Potato Journal, Sept. 1949), who say that while varieties differ widely, "the usable life of potatoes at 50 F. is much longer than is commonly realized. Since potatoes held at this temperature are usually suitable for immediate use by processors without further conditioning (such as holding for a period at 70-80 F. until sugar content declines), much time and expense could be saved by manufacturers and those who supply hotels and restaurants. With use of sprout inhibitors early in storage according to manufacturers' directions, the usable life of potato stocks at this temperature can be lengthened." These authors give 3-year averages of storage life of 35 varieties stored about 3 weeks after harvest, without sprout inhibitors. Here are a few:

	Weeks before sprouting began at			
	70F	60F	50F	40F
Green Mountain	8	10	15	33
Irish Cobbler	8	9	13	30
Katahdin	8	8	13	40+
Triumph	8	9	11	35
White Rose	8	12	15	27

Keeping Quality of Varieties

Some varieties keep less well than others, and a given variety will vary also. In the three years averaged above, Irish Cobblers varied from 11 to 15 weeks at 50 F. before beginning to sprout, but this variation is extreme. Potatoes are of course usable even after sprouting has begun. The numbers of weeks here represent time before 75 per cent of the potatoes sampled had shown a definite initiation of sprout growth.

At 40 F. potatoes will keep longer but if kept long at that temperature they are seldom suitable for potato chips, French frying or dehydration, without conditioning at 70-80 F. until a trial cooking test shows suitability for such use. Usually the conditioning period required is 1 to 3 weeks. (Rose, Wright, and Whiteman, USDA Circular 278, 1949.) After storage at temperatures slightly lower than 40 F, potatoes do not improve in table quality when conditioned; sugar content declines but other off-flavor and discoloration may develop, thus indicating that temperatures under 40 F. are of doubtful value and should be avoided (Wright and others, Food Industries, Sept. 1949).

A relative humidity of 85 to 90 per cent prevents undue shrinkage. High humidities are necessary for cork formation, or wound healing. Formation of this wound periderm on cuts and bruises due to harvest and handling is accomplished at 60 to 70 F. in a few days, but at 45 F. it might not develop in 2 weeks, and decay would be likely to develop instead. These facts point out the need for a short period of holding at higher temperatures following harvest, before storage. They also point out the extreme need for careful handling of potatoes, to avoid cracks, bruises, and other damage.

The generally used method of shipping new potatoes from West to East is to ice the cars initially and re-ice once or twice en route, in accordance with outside temperatures. Potato chip makers avoid iced shipments if possible to be sure that the potatoes do not become cold enough to accumulate sugar. Potatoes are severely damaged by freezing, which takes place at 29 F. Light causes greening; therefore, they must be kept in the dark. Seed potatoes are not damaged by 38 to 40 F. temperatures; in fact, temperatures in this range are commonly used for seed potatoes.

Early and intermediate potatoes (Southern crop) are usually held in unrefrigerated storage through the summer or part of the summer, although investigations have shown that 50 F. after a curing period is best and that for chipping purposes a storage temperature of 60 to 70 F. is beneficial, provided of course that storage is not continued too long. Relative humidity should be 85-90 per cent. (Rose, Wright, and Whiteman, USDA Circular 278, 1949.)

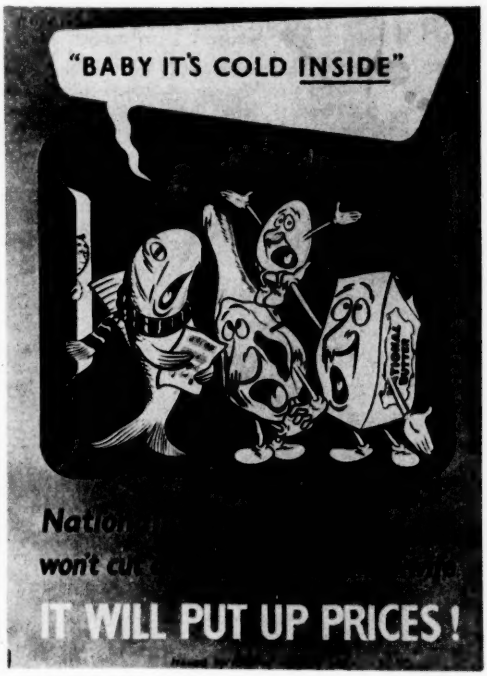
Summary

1. Storage temperature of 50 F. is generally recommended for late-crop potatoes if they are to be used within three to four months.

2. A storage temperature of 40 F. will control sprouting for six to ten months but sugars accumulate in the potatoes at this temperature and a warming-up period after storage is required to reduce this sugar content.

3. Relative humidity should be 85 to 90 per cent.

Cold Storage Trade Protests



—cr. Acme Photo

Butchers, grocers and fishmongers of London, England, have received copies of this poster, issued by the Cold Storage Trade Action Committee, to be displayed in shop windows, hitting out against nationalization of the cold storage industry. The committee represents about 300 cold storage and allied concerns.

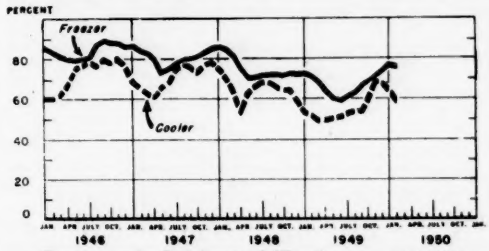
Cold Storage Holdings—Coolers and Freezers Show Decrease from Last Month

PUBLIC cold storage cooler space was 59 percent filled on February 1, a decrease of 5 points since last month. This net change was greater than average, since coolers normally decrease by 3 points during this period. The Pacific region showed the greatest decline with a 9 point change in cooler occupancy followed by the East North Central with an 8 point decrease. Only the East South Central region reported an increase over last month in cooler occupancy. Utilization of cooler space was greatest in the West North Central area where occupancy was 73 percent.

Public freezer space was 74 percent filled on the first of this month, down 2 points from last month and 5 points below average for this time of year. Freezer occupancy in New England, West North Central, and East South Central regions, however, was 80 percent filled or better. Although freezer occupancy for the Nation was lower than last month, warehousemen in the East South Central and West North Central regions reported February 1 freezer occupancy to be greater than on January 1.

On the average, occupancy for public warehouses in key cities was 58 percent for coolers and 73 percent for freezers, but warehouses in Detroit reported 85 and 72 percent occupancy for coolers and freezers, respectively, while Milwaukee reported 77 and 88 percent occupancy. In Minneapolis, 86 percent of the cooler space and 96 percent of the freezer space was utilized on February 1.

Total weight of foodstuffs under refrigeration on February 1 totaled 4 billion pounds with 2.2 billion pounds in cooler storage and 1.8 billion in freezer storage. During January the volume in coolers decreased by 14 percent, while freezer-held commodities increased one percent. The net withdrawals of cooler commodities amounted to 362 million pounds, as fresh, dried, and evaporated fruits, canned fruits and vegetables, and cheese were withdrawn from storage. Cooler-held meats, however, increased during the month as did stocks of nuts, shell and dried eggs.



Occupancy in Refrigerated Warehouses, 1946-1950

The increase in freezer-held commodities of 23 million pounds was contra-seasonal. Normally, there is a decrease in total weight in freezer storage during this time of year. Last year there was a net withdrawal of 32 million pounds; the average January to February change was a decrease of 48 million pounds. The increase was due to the contra-seasonal movement into storage during January of frozen eggs and poultry and to greater than average accumulations of selected meat items.

Fresh apples in storage were down to 19 million bushels

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Feb 1, 1950	Jan 1, 1950	Feb 1, 1949	Five-year Average
Meat and meat products, lbs	847,874	724,804	888,551	784,352
Lard and rendered pork fat, lbs	93,172	73,995	160,610	116,418
Frozen poultry, lbs	294,645	292,513	148,418	267,667
Creamery butter, lbs	104,596	113,993	18,737	24,284
American cheese, lbs	159,276	168,670	116,779	106,365
Other cheese, lbs	13,356	16,428	15,707	14,868
Shell eggs, cases	379	110	152	255
Frozen eggs, lbs	55,017	53,902	71,532	97,095
Apples, bu	19,365	25,667	12,971	18,406
Frozen fruits, lbs	279,697	300,409	317,695	341,006
Frozen vegetables, lbs	337,600	371,003	262,047	231,066
Frozen fish, lbs	125,516	146,813	127,635	112,286

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		Feb. 1, 1950 (%)		Jan. 1, 1950 (%)		Feb. 1, 1949 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	3,060	5,295	56	84	59	87	41	75	56	75
Middle Atlantic	39,197	29,827	56	73	61	75	50	66	63	81
East North Central	26,902	29,489	58	71	66	74	52	73	59	80
West North Central	10,291	15,323	73	83	73	82	56	85	66	80
South Atlantic	8,506	5,770	60	77	61	79	52	83	63	86
East South Central	2,868	2,650	70	83	62	81	61	87	70	80
West South Central	6,718	6,375	58	58	62	60	63	68	65	86
Mountain	1,640	1,937	56	80	61	78	47	65	65	85
Pacific	15,781	18,327	56	75	65	78	53	61	63	74
United States	114,963	114,993	59	74	64	76	52	71	63	79

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu Ft)		Space Occupied—Per Cent Feb 1, 1950		Jan 1, 1950		Net Piling Space (000 Cu Ft)		Space Occupied Feb 1, 1950		Jan. 1, 1950	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	93	111	47	72	66	82						
Middle Atlantic	1,708	1,293	52	77	59	80	1,866	286	89	89	88	86
East North Central	2,768	1,474	76	49	68	49	4,482	1,497	88	89	89	89
West North Central	807	2,354	88	84	87	86	14,504	6,043	80	88	87	77
South Atlantic	485	1,385	44	43	51	16	1,377	243	85	98	99	99
East South Central							403	100	85	94	85	94
West South Central	262	31	39	16	33	68	2,840	520	96	97	100	100
Mountain	117	38	86	74	92	79	539	391	96	96	100	100
Pacific	3,450	2,296	39	72	49	77	2,835	505	93	92	96	95
United States	9,690	8,982	57	67	60	66	28,846	9,585	90	90	90	83

NOTE: Blank spaces indicate that insufficient returns were received

on February 1. This compares with 13 million bushels in storage a year ago. Holdings of pears were reduced by one-half million bushels since January 1, leaving a little more than a million bushels in storage on the first of this month. All varieties of frozen fruits in storage, except apples and orange juice, were in lesser volume than a month ago. Frozen apples increased by about 3 million pounds and orange juice by 4 million pounds.

The greatest net decrease in storage stocks was reported in holdings of strawberries which decreased by 9 million pounds. Frozen cherries followed next with a decrease of 5 million pounds during January. Decreases for other fruit items ranged from 1 to 3 million pounds. The overall net reduction in frozen fruit stocks was 21 million pounds or about 2 million pounds less than average for this time of year. Total stocks on hand of 280 million pounds compares with 318 million pounds in storage a year ago and average February 1 holdings of 341 million pounds.

There were less frozen vegetables in storage on the first of this month than last month—about 33 million pounds less. Stocks of all the major frozen vegetable items were reduced since January 1, with more than half of the decrease occurring in stocks of frozen peas. Frozen lima beans were reduced by 7 million pounds, while snap beans and sweet corn each showed a 5 million pound net decrease in stocks since last month. The net withdrawals during January for all frozen vegetables left 338 million pounds in storage on February 1. A year ago total frozen vegetables amounted to 262 million pounds while during the 5-year period, ended 1949, February 1 holdings average 231 million pounds.

Total holdings of butter in storage on February 1 was 8 percent less than last month. The net withdrawals of 9 million pounds during January left 105 million pounds in storage, of which 89 million pounds were stored for the account of Government agencies.

American cheddar cheese holdings were 50 percent greater than average with 159 million pounds reported being in storage. More than 96 million pounds of cheddar cheese were stored in the East North Central region.

Shell eggs stocks were more than three times the stocks of last month. The 379 thousand cases in storage were largely in the Middle Atlantic and East North Central areas. There were 19 million pounds of frozen eggs in the West North Central area and 13 million pounds in the East North Central region on February 1, which accounted for almost three-fifths of the total frozen eggs in storage—55 million pounds.

Poultry stocks, up 2 million pounds since last month, amounted to 295 million pounds. Total weight for all poultry classifications except fowls and ducks increased during January. Turkeys, at 137 million pounds, represented an increase in stocks of 10 million pounds; broilers, fryers, and roasters each showed small increase in stocks since last month.

During January there was a net into-storage movement of 9 million pounds of beef, bringing total stocks on hand February 1 to 130 million pounds. Current holdings were 21 million pounds less than the stocks of a year ago, and were 30 million pounds below average for this time of year.

February 1 stocks of fishery products amounted to 146 million pounds, of which 126 million were frozen and 20 million pounds cured. Stocks of frozen fishery products were about average for this time of year but were equal to the stocks of a year ago.

Storage Outlook

Public cooler occupancy on February 1 was 4 points below average for this time of year and was at a level reported on February 1, 1943. Despite a contra-seasonal movement into storage of shell eggs, cooler occupancy decreased from January 1 by more than the average amount. For the 5-year period ended 1949, March 1 occupancy in public coolers average 2 points less than on February 1. Should this trend prevail this year, the expected occupancy level next month will be 57 percent which again will be identical to the 1943 occupancy reported by public cold storage warehousemen.

Freezer occupancy did not decrease during January according to the 5-year average change. The decrease of 2 points compares with the average decrease of 3 points. Total weight in freezers is expected to decrease during February. Freezer occupancy, according to past performance, should decline 3 points from the occupancy reported on February 1, which would place public freezer occupancy next month at 71 percent. Whether the decrease will be as much as the average depends largely on the movement out of storage of frozen fruits and vegetables—which moved from storage in average amounts during January—and the in-movement of frozen meats which increased in excess of average during January.

Cold Storage Stocks of Frozen Fruits and Vegetables

TOTAL stocks of frozen peaches, raspberries, and strawberries in storage January 1 amounted to 93 million pounds. Approximately two-thirds of the total stocks, or 62 million pounds, were classified by warehousemen as to container size. Packages of one pound or less amounted to 35 per cent of the stocks classified in comparison with 37 per cent reported last month. For individual items, peaches and strawberries showed little change since last month in the ratio of consumer-sized packages to the larger sized containers. A greater out of storage movement of retail packages of strawberries brought the percentage of strawberries in this type package down to 40 per cent. In December, 44 per cent were reported to be in packages of one pound or less.

COLD STORAGE STOCKS OF FROZEN FRUITS AND VEGETABLES IN PACKAGES OF ONE POUND OR LESS IN STORAGE JANUARY 1, 1950 AND DECEMBER 1, 1949 (000 Lbs.)

	January 1, 1950		December 1, 1949	
	Lbs.	Pct.	Lbs.	Pct.
Peaches	5,293	45	5,580	44
Raspberries	4,019	21	4,738	21
Strawberries	12,420	40	16,143	44
Asparagus	2,820	73	3,007	73
Beans, lima	19,582	61	21,751	58
Beans, snap	17,168	73	18,770	68
Corn, sweet	9,942	46	10,169	38
Peas, green	31,484	61	36,251	59
Spinach	13,601	82	10,786	83

Approximately two-thirds of the selected frozen vegetables reported by container size were in retail packages on January 1. This compares with 59 per cent reported last month and 58 per cent reported in January 1949. The proportion of consumer-sized packages of spinach remained high with 82 per cent reported to be in containers of this type. A year ago this time 78 per cent of the spinach was in packages of one pound or less and in January 1948 the percentage was 73. Significant changes took place in the ratio of retail packages to larger-sized containers of sweet corn and snap beans. Sweet corn in packages for retail use amounted to 46 per cent and snap beans to 73 per cent of the stocks classified in comparison with 38 and 68 per cent respectively reported last month. There was no change since last month in the proportion of asparagus in retail containers but lima beans and green peas increased slightly.

Storage of Sweet Potatoes

IN THE storage of sweet potatoes, a bulletin of the Refrigeration Research Foundation points out, the major responsibilities of the storage operator are avoidance of too much handling or rough handling and maintenace of suitable storage conditions as outlined below. Special houses for sweet potatoes that can be heated for curing and held reasonably close to required conditions by ventilation are commonly used. Any refrigerated storage operator who has space suitable for control at 50 F. or slightly above can provide good storage for sweet potatoes.

In fact it might well be argued that the safe and sure control of temperature and humidity are factors of importance in preservation of sweet potatoes and in extension of their storage life. Ezell, Wilcox and Hutchins (Food Research for Mar.-April, 1948) point out that sweet potatoes in storage are living organisms and their normal physiological functioning is affected by storage conditions. "A few degrees rise in temperature," they say, "may favor increased metabolic activity and new growth, while a few degrees drop may subject the roots to physiological injury and attack from pathogenic organisms."

Temperature and Humidity

The unusual requirement in sweet potato storage, as compared with most vegetables, is the necessity for a minimum of 50 F. and the desirability of moderate relative humidity. Short periods of lower temperature (a few hours) are not a cause for alarm, but a prolonged period may result in decay. Tests have shown that 40 F. lowers table quality as compared with 50 F. and that decay definitely increases at 30 F. (J. M. Lutz, USDA Circular 699, 1944). Average freezing points range from 27.6 to 29 F. (R. C. Wright, USDA Circular 447, 1937). Cured roots, when exposed to low temperatures in tests, decayed less than uncured roots and curing also improves color (J. M. Lutz, USDA Circular 729, 1945).

In Maryland Agricultural Experiment Station Bul. A22, by Appleman and others (1943), 85 F. and 95-100 per cent relative humidity are recommended for the curing period and not below 50 F. for storage (not even temporarily). This temperature is most suitable for the purpose of control of sprout growth; relative humidity should be held low enough in storage to aid in control of growth of sprouts.

Louisiana Agricultural Experiment Station Bul. 354 (1942), by W. D. Kimbrough and M. F. Bell, is concerned with interanl breakdown of sweet potatoes due to exposure to cold. In 1940 low temperatures in southern Louisiana (15-17 F.) caused concern because many storages were not equipped to hold sweet potatoes in the recommended range of 50-55 F. Exposed potatoes in many cases did not show normal latex on cut surfaces—a condition commonly believed to indicate cold injury, and within a few weeks many showed various stages of internal breakdown. Subsequent tests showed conclusively that exposure to 40 F. for as short a period as one week was injurious and the recommendation was made that temperature should not be allowed to fall below 50 F.

Soft rot *(Rhizopus)* is probably the most destructive storage disease. Black rot *(Ceratosomella)* probably ranks second. The latter is a greenish black decay frequently fairly shallow and sometimes circular in outline on the surface. Little evidence of black rot may be present at digging time but a large portion of the roots may show the disease at conclusion of storage. No satisfactory chemical treatment is known and culling affected stock does not give control.

A "pasteurization" treatment of 1 day at 110 F., followed by curing at 85 F. and 80 per cent rh (3-10 days) has been reported to be successful in preventing black rot in sweet potatoes dug from fields where the disease was known to exist (L. J. Kushman and J. S. Cooley, Jour. Agrl. Research, April 1, 1949). The treatment is not widely used, however.

Careful handling is important in the prevention of losses. The curing period permits the healing of wounds and abrasions incidental to harvest. Sweet potatoes that are damaged or decayed seriously should not be stored. Stored sweet potatoes should be handled as little as possible. Crates, baskets or bins are commonly used containers.

Summary

1. Sweet potatoes should be "cured" whenever possible, shortly after harvest. Curing means storage at 80 to 85 F. with a relative humidity of 85 per cent or higher for ten to fourteen days.

2. If curing is impossible, keep sweet potatoes at temperatures above 50 F. and store at temperatures that do not go below nor much above 50 F., with a 80-85 per cent relative humidity.

3. Storage period is four to six months.

Adams Appointed Notre Dame Director

JOHN Q. ADAMS, president of the Union Terminal Cold Storage Co. Inc., Jersey City, N. J., was named one of a four man board of directors of the Alumni Association of the University of Notre Dame.

Mr. Adams was in South Bend recently to report to the Rev. John Cavanaugh, president of the university on the progress of the drive being made by himself and twenty-five co-chairmen, to secure contributions from the various branches of the food industry at the Port of New York toward the erection of a new science building at Notre Dame, and for an endowment fund.

Outstanding among universities for its achievements in research, notably the discovery of synthetic rubber, Notre Dame at request of the government is presently engaged in atomic research problems and other studies affecting the national interests.

Canadian Cold Storage Holdings

THE Dominion Bureau of Statistics of Canada, Agricultural Branch, reports the following commodities held in cold storage on January 1, 1950.

Apples in cold storage on January 1, 1950 amounted to 6,826,232 bu. as compared with 3,290,593 bu. January 1, 1949 and 8,919,616 bu. December 1,1949.

Frozen fruit holdings in storages and factories January 1, 1950 amounted to 13,959,000 lbs. as compared with 15,813,000 lbs. January 1, 1949 and 15,980,000 December 1, 1949.

Stocks of frozen vegetables in storages and factories on January 1, 1950 amounted to 6,982,000 lbs. as compared to 6,986,000 lbs. January 1, 1949 and 7,318,000 lbs. December 1, 1949.

New York Group Elects Officers

AT A RECENT meeting of the cold storage group of New York City, R. C. Stokell, National Cold Storage Co., Inc., was elected chairman; J. K. Storer, Manhatten Refrigerating Co., vice-chairman; Leo J. Fisher, Harborside Warehouse Co., Inc., Jersey City, N. J., secretary; Earl Cantor, Kings County Cold Storage, Inc., Brooklyn, treasurer.

The Practical Refrigerating Engineer

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QUESTIONS AND ANSWERS

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Accident Prevention Is Practical and Profitable

By J. P. Ferron

Supt. of Safety, Pacific Fruit Express Co.
San Francisco, Calif.

SAFETY and accident prevention work are by no means the "new look". Many organizations and group gatherings holding annual meetings fail to recognize the merit of safety and its asset to their business. Or else they do not feel it is worth the time and effort to give the subject a spot on the program. I think it is commendable of your association to consider that safety is just as primary an object of business as sales and production.

You know the question has often been asked, "What price is Safety."

Gentlemen, I was probably no more surprised than you when I read in the news the amount of our national debt. I didn't realize they could stretch a dollar sign that far to the left. With that staggering figure as a point let us consider for a moment a little business deal. Or perhaps you would prefer to refer to it as a gamble.

At the moment everyone is recognizing the speaker with what is regarded as the most valuable asset of the human anatomy—your eyes. Now, clench both hands, shuffle your feet a bit just to awaken yourself to the fact you are all intact. Just suppose now that President Truman felt so inclined as to let me have a duplicate amount of that national debt so I could do a little purchasing. How many of you would be willing to sell—an eye, hand, foot, arm or leg and disfigure yourself for life just to get any or all of those billions. What! No takers. You're still good red blooded American gamblers, but you realize you can't take it with you—so you thank God there is no exchange for the fortune you have in yourself. The national debt isn't enough to induce the sacrifice of even one life or limb in this room. Quite an expensive piece of human machinery we have, isn't it? That is just how valuable the life and limb of each one of your employe's is to them.

When we say that accident prevention is practical we can base this on the fact we are literally endowed with it. It is something we have had with us from the beginning of time, at least before the time of birth. It does not take a too brilliant or imaginative mind to follow our safety background.

From the time human beings are conceived, nature, or the phenomena of child bearing, placed an invisible protection or guard around that life to take care of unexpected bumps and jars that could be injurious. Then as the little fellow develops to the point where he can hold himself in a sitting position he is placed on a blanket on the floor with many pillows placed around him—just as another protective measure. As he matures it is a continual series of teachings, warnings, etc., from dad and mom to keep him mindful of the dangers that are ever lurking to bring injury to his little body. This training goes on through the various stages of his schooling, including his athletic endeavors and highway traffic problems. With the grooming, teaching and protective measures taken to develop this human specimen is your answer why we had the best team on the field and in the air from December 1941 to 1945.

Now that this perfect young man is on his own and fighting for his country is the work done? Is it the time to forget the teaching and consideration that had been given this same life and limb? It was, undoubtedly, hard for them to visualize why their safety was being given a second thought in a major conflict such as this. However, the leaders of our armed forces were cognizant of the value derived from the preservation of man power through steps taken in past years by our industrial leaders and numerous safety organizations, lead by the National Safety Council. To their experience in the handling of mechanized warfare they added the advantages of safety education.

Joe E. Brown, one of the first entertainers to visit our fighting men at the front to boost morale made the following statement in his book covering his service activities, "Your Kids and Mine":

"Right here, before I begin telling you about your boys, I want to tell you something about the men in high ranking positions who are responsible for the safety—and in fact for the lives—of our boys. Never have there been finer men than these, more human, more understanding, more tireless in the execution of war and in their care for the well-being of our Army and Navy."

Safety Statistics Show Losses

Figures don't lie—gentlemen, and safety statistics prove from 1941 to 1945 you were considered safer as to life and limb dressed in khaki or blue than dressed in the uniform of industrial occupation. In other words, after that boy or girl is raised and through school, with all its teachings, protection and warnings as to care of life and limb, then turn them loose as men and women to work in industry, the

Presented at the 40th Annual Convention N.A.P.R.E.

job of helping them protect and keep their eyes, hands, feet, even their lives intact has just begun.

And right here, we ask, Why? Haven't we always been the infallible nation of the world; conquered all obstacles; won wars for ourselves and others; first in everything we undertake. Why then, the necessity for a special program built around our people to instruct and caution them to protect their personal safety. This has been the $64 question since the origination of the first safety movement back in England in 1880; then to this country in 1885, almost 65 years ago, on down to the present day. We are still trying to find the answer to why this country has approximately 20,000 accidental deaths per year in industrial occupation; not to mention the hundreds of thousand lost time and permanent injuries in the same category. This does not include the thousands of deaths and maimed accident victims occurring on our highways each year.

Reducing Accident Toll

With the tremendous loss of life, human sufferings and helpless cripples as the result of these uncalled for accidents, still statistics prove the efforts being made through safety work and accident prevention can reduce this toll of industrial accidents. It is a work comparable with a religion in that you must keep it in the minds of your peoples at all times. There are no breathing spells, no time out, or intermission. If present day safety programs that are doing so much good were to stop and rest on their laurels, I believe in time this great nation of ours would become extinct—the victim of a demon as devastating as war—death and injury from accidents.

Gentlemen, I'm satisfied if such a condition were to prevail, you would be the first to throw your hat in the ring to prevent such a catastrophe. In your enthusiasm the first question might be "it must not happen". We will have to get these dormant safety organizations back into the swing.

And, how can we get the safety germ rejuvenated with the necessary impetus to carry through? If there are any members present who do not have an organized safety program or some who are anticipating putting one into effect, my number one suggestion would be, get the sanction or "green light" from top management. Believe me, get the okay right from your President. When he starts the ball rolling you will have little interference in lining up the balance of your organization.

I will not dwell at length on the detailed organization of a safety program, but from my experience, after securing the approval of top management the key to success rests with the attitude and interest you get from the direct supervisor or foreman of your men. They are the "team captain" or quarterback as it were who will put the idea across, get the enthusiasm and drive that is necessary to produce results.

It is a recognized fact that industry must have capital. It must have executives, salesmen and production managers. Employers there must be if employes are to receive remuneration, but the hub of the wheel, the heart of the industrial situation, is the man who personally directs the work of the employes. By whatever name he is called—foreman, supervisor, gang-boss, leadman, or straw boss—there is, after all, only one man who tells the worker what to do and how to do it, and sees to it that the work is done; and that man whom I refer to as foreman, controls his own fortunes and plays a very important part in the success of the organization of which he is a part.

Too many times after an injury occurs you will find these supervisors or foreman attempting to explain or close out an accident case with, "I told that fellow a half-a-dozen times how to handle that tool or machine, but still he got hurt". Figures based on "I.Q." tests secured from the armed forces definitely prove the intelligence of the average man is 13 years. That means that, regardless of how old he may be in years, he thinks no better than a 13 year old boy, cannot understand more, and cannot learn faster. It means, too, that he is going to look at safety from the viewpoint, not of a man, but of a 13 year old mind.

Do you gentlemen happen to recall when your little Tom, Dick or Harry was 13 years old? Do you also recall how exasperated you became at times in trying to put over a thought or solve a problem for him? I venture to say we were all in the same boat and finished up by literally drawing a picture for him so we could get our idea across. That, gentlemen, is precisely what supervision is up against with individual cases in industry today. On contact they will know who these object cases are with their experience and patience in teaching will bring about surprising results.

This method of safety education, or picture drawing, as it might be referred to, is definitely brought out in the advancement of visual education. In my opinion the various (still - sound - slide - 8 or 16 MM) motion pictures, in the numerous industrial safety fields, have been a tremendous help in the present day safety movement. Unfortunately, the film library covering safety in refrigeration, as the handling of large cake ice out of storage and over elevated platforms is limited. The making of such an instruction film by the Pacific Fruit Express Company is being considered. However, the selection of general industrial safety films is well stocked and these are for either sale or rent.

The Money Angle

Now let us finally consider the money angle of safety. Is this establishing and putting into effect such a program to be looked at from a humanitarian angle alone? It should not be, and I'm afraid on that score it would be a difficult bill of goods to sell your management. Business is not founded and progressed along such lines. Actually safety is one of the best money makers in any industry.

Safety is a peculiar commodity in that the more of it you buy, the less it costs. Some think its a lot of wasted time, energy and effort. They fail to realize that the concerns who pay the most for it are those who try to get along without it. Cutting down on safety activities is always false economy. Accidents respect neither persons, seasons nor conditions. Circumstances that lead to accidents exist in bad times just as in good times. There are no rest periods for safety, no time-outs, no vacations. No truer words were ever spoken than the old saying, "When safety's away, there's a bill to pay."

Your statistician, accountant or bookkeeper can give you a fairly close figure, as they have it, on the payout for accident and injury cases. They can give you the amount of compensation or award paid, plus medical expense and other incidentals, but, they will only give you one-fourth of what it actually cost you to have the accident.

All of you understand that accidents represent monetary loss as well as human suffering, but not everyone understands that the heaviest losses are usually overlooked. Let me at this point reiterate: prominent in the mind of every employer is the first, or direct, cost of the accident as measured by compensation or liability claims, plus the charges for medical attention. This cost can be covered by insurance.

In addition to the direct and obvious cost, there are numerous other sources of expense involved, which are not covered by the insurance policy, but which must be borne by the employer. These additional, "incidental", or indirect costs of every accident total not less than four times the direct costs.

Indirect Cost of Accidents

Excluding compensation and liability claims, excluding medical and hospital expense, excluding insurance premiums, and excluding the cost of lost time, except when actually paid by the employer, these indirect cost of accidents include:

1. Cost of lost time to injured employe.
2. Cost of time lost by other employes who stop work out of curiosity, sympathy, etc.
3. Cost of time lost by foremen, supervisors, or other executives, assisting, investigating and reporting the case.
4. Cost of time spent on case by first-aid attendant and hospital staff, when this time is not covered by insurance.
5. Cost due to injury to the machine, tools, or other property, or to the spoilage of material.
6. Incidental cost due to interference with production, failure to fill orders on time, loss of bonuses, payment of forfeits and other similar cause.
7. Cost to employer under employe welfare and benefit systems.
8. Cost to employer in continuing wages, in full, of the injured employe, whereas the services of the employe (who is not yet fully recovered) may be worth only about 50 per cent of their normal value.
9. Cost due to the loss of profit on injured employe's productivity and on idle machines.
10. Cost of subsequent injuries that often follow in the wake of a serious accident.
11. Overhead cost—light, heat, rent, taxes, etc., which continues while the injured employe or broken machine is idle.

Let me at this point cite an example to which some of the above numerations would apply:

I have in mind a production line of some 65 to 70 men engaged in a rebuilding program producing so many units per day. The cost of these rebuilt units was figured at $1000 per unit. These men with good supervision were well organized in their work. For a period of some 40 days this group of men had met the daily required output of the job without even so much as a scratched finger. Shortly after lunch one day one of the men while working on a scaffold became over-balanced and fell a distance of eight feet to the ground landing on his back.

In the fall he struck the side of his head, sustaining a deep laceration which bled profusely, also a fractured back. The fall and injury did not render the man unconscious and until he was removed to the hospital the sight of this seriously injured man in pain had a telling and serious effect on the entire balance of men in this line. So serious in fact that the limit production output did not reach the daily requirement for the next three days. This is what is meant by indirect or hidden costs as the result of personal injuries.

In figuring the cost of accidents with injury you cannot justify overlooking, or adding to the direct cost, the indirect or hidden cost. This loss directly effects your production and output.

Summary

In summarizing, statistics involving facts and figures compiled in a safety program are of value only from the standpoint of a comparison. From the moment you have an accident—man hurt—machine damaged—disruption of production and personnel your losses start. There is no compromise. There is no salvage. You cannot compensate for a human life with dollars and cents. An active accident prevention program in your organization to eliminate this destroyer is your only solution—when you have such a set-up, only then will you find it practical and profitable.

In closing I'm sure all of you have at some time read the famous safety slogan of Abraham Lincoln, "It is the duty of every man to protect himself and those associated with him from accidents which may result in injury or death." While I do not wish to place myself on the level or in the same category with this famous humanitarian, I would like to add as a closing thought my safety philosophy, "That the greatest miracle on this earth is the birth of a human life, and the next greatest work is to preserve it."

N.A.P.R.E. Question Box

NOTE: H. G. Venemann, Chairman of the Educational Committee, has agreed to answer through this column all questions asked by members of the N.A.P.R.E. Please send your questions to him care of Purdue University, West Lafayette, Ind.

Use of Mollier Chart

Question No. 838: Can one determine the faults of a compressor by the use of the Mollier chart? How will defects in the compressor or poor performance show up on the chart?—R.M.E.

ANSWER: A Mollier chart is a graphical presentation of the thermodynamic properties of a refrigerant, covering a greater range than is included in the tables.

Usually the only properties known about the refrigerant as regards compressor operation are the temperatures and pressures at the point of entrance and at the point of leaving. We may locate these two points on the Mollier chart, if the gas is superheated at the point of entrance. This information alone does not tell us the important things we would like to know about the compressor, such as:

(1) Is it pumping as much gas as it should?

(2) Is it consuming more power than it should?

The volumetric efficiency of a compressor is the measure of its pumping performance. Its combined compression and mechanical efficiencies is the measure of its power performance. These require a definite knowledge of the weight of refrigerant pumped and the data about the gas upon entering and leaving the compressor.

A comparison of the point at discharge with the "constant entropy line" on the Mollier chart will usually indicate certain faults of compressor operation. If this point lies at the right of the "constant entropy line" it signifies excessive pressure and superheating within cylinder while the piston is pushing the gas out into the line. This may be due to (a) restricted area of discharge valves and ports, (b) over speeding of compressor, (c) excessive spring tension on discharge valves, (d) lack of lubrication of cylinder walls, or (e) ineffective cooling by cylinder jacket. If this point at discharge lies on or at the left of the "constant entropy line" it does not tell us too much. It merely signifies that the cooling effect of the cylinder jackets is sufficient to offset any or all of the above defects. The internal faults of a compressor can be diagnosed best by a study of indicator cards.—H. G. Venemann.

Relative Humidity Measurement

Question No. 839: I would appreciate your giving me information on the best methods for accurate determination of the relative humidity in freezer storage rooms at 0 F and below.—C.B.

ANSWER: This question was answered several years ago and published in the 1946 Operating Data Book, page 45. An excellent treatise on "Psychrometry in the Frost Zone" by D. D. Wile was published in the October 1944 issue of Refrigerating Engineering.

I will quote from this treatise as it applies to a sling psychrometer.

"For accuracy the wet bulb and dry bulb thermometers should be graduated to 0.2 degrees for temperatures near 20 F., and to 0.1 degrees or finer for temperatures near zero F. Thermometers should be checked against a precision standard or against each other to determine any difference in their calibration.

"At temperatures well below freezing, discard the wick and coat the bulb of the thermometer with ice. The ice film is best formed by dipping the chilled thermometer into distilled water at approximately 32 F. The thermometer is then removed from the water and the film allowed to freeze. The process may be repeated several times if necessary to build up a suitable film thickness. In order to prevent conduction of heat along the glass stem of the thermometer to the bulb, it is important that the ice film cover about one inch of the stem as well as the bulb.

"To reduce errors due to radiation from the observer's body, George A. Horne of the Merchants Refrigerating Company, New York, recommends that the observer walk up and down the aisle of the cooler while manipulating a sling psychrometer and then taking readings quickly with the aid of a small flash light."

For a further discussion of this subject and the effect of super-cooled water on the wet bulb readings the reader should get a copy of D. D. Wile's article. A psychrometric chart using vapor pressures over ice should be used for obtaining relative humidity, and other properties of the air.—H.G.V.

Insulation on Ground Floors

Question No. 840: In earlier years many engineers would not recommend placing a freezer room carrying a temperature lower than 20 F. on a ground floor. Even though standard thickness of insulation related to the temperature was installed, experience had shown that the subsoil froze and the floor was pushed up.

Now freezer rooms are not only being erected on ground floors but also in some cases the floor on the ground is not insulated. For this reason I would appreciate expert opinion on two questions: 1. What construction methods will avoid trouble when freezer rooms with floor insulation are erected directly on the ground? 2. Under what conditions is it possible to erect a freezer room on the ground with no floor insulation so that loss of refrigeration is not excessive and no trouble ensues with floor heaving?—C.P.

ANSWER: This question has received the attention of refrigerating engineers for many years, and particular interest has been aroused in its since Elliott Hallowell of Dallas, Texas, gave his paper at the New Orleans national convention in 1948 on Recent Developments in Refrigerated Warehouses. This paper was published in the 1949 NAPRE Operating Data Book, and a similar article appeared in the March 1949 issue of Refrigerating Engineering.

In these papers Mr. Hallowell explained why he did not insulate the floors of the Alford Refrigerated Warehouses containing the largest freezer rooms ever built. The soil conditions which existed at the site of this warehouse may be the answer to part 2 of Question 840, i.e.

"The area in which the warehouses are located is well drained and the soil consists principally of alluvial clay. This layer extends about 15 feet below the floor level and is followed by a layer of hard gravel, followed in turn by rock. Test holes showed no flowing water in any place. Thus it was safe to assume that 15 feet of clay would be relatively free of water, since any drainage water would seek the more porous gravel bed. If this is true, then it can be further assumed that as refrigeration is applied to the rooms, the dirt below will be chilled and a gradient will be established, and an equilibrium condition reached eventually. The k values for earth vary from 5 to 12 and taking an average k value of 8 and a depth of 15 feet a coefficient of 0.045 Btu per hr., deg. F., sq. ft. is reached.

"It was realized that losses at the edges of the rooms would be somewhat greater but, since the rooms are larger, these losses would be insignificant. When a room is cooled, the earth below will become dry because moisture is removed to the cooling coils. The cooling down process takes a considerable period of time but once a room is down, the chilled earth mass below the floor gives a tremendous flywheel effect so that such rooms are extremely stable from a temperature standpoint. The above theory is borne out by the fact that rooms totaling about 50,000 sq. ft. in floor area at the original plant of Alford Refrigerated Warehouses have been operated for the last several years and tests on the rooms have shown no excessive loading due to lack of floor insulation.

In order that you may have the advice of experts on this question, please read the several answers which were sent to me.—H.G.V.

Heating Coil Stops Frost

With over twenty years experience in one plant, where we have continually maintained freezer temperatures on ground floors, we have found that temperatures as low as 10 degrees above zero F. are safely maintained by using 150 percent of standard thickness specification for insulation.

For temperatures below that point we have had several bitter and costly experiences until we hit upon the idea of installing "Radiant Heated" floors in freezers. The procedure is generally uniform. If the building is located in low area or where sub-surface water strata, or other conditions may produce excessive moisture, it is advisable to back-fill with washed gravel or other suitable material, install drain tile, then pour ground slab of concrete in which suitable pipe is installed. This slab is then moisture-proofed by the application of hot asphalt, preferably using a suitable membrane, such as two layers of forty pound asphalt felt paper, hot mopped. The selected insulation is installed thereon, and final floor of four inch concrete, usually reinforced with 6 - 6x6 - 6 wire mesh, is laid.

The coils in the lower slab of concrete are usually laid out out in multiple to avoid too long runs. We header these coils and connect to water supply which is the wasted water from the compressor cooling jackets. We also pipe city water to the header that pressure may be applied to wash out any entrained foreign matter that may be dropped in the coils. The discharge ends of coils are elevated and discharge into an open catch-basin providing visual control for uniform distribution, each coil being valved off the header. This elevation also maintains a flooded condition in the coils, eliminating trapping of air therein. A thermometer is installed in supply header and at discharge end of each coil.

Wrought iron pipe is probably the most suitable material since it's coefficient of expansion is near to that of concrete, thus any sudden temperature change is less liable to fracture the concrete slab. We have, however, successfully employed 1 in. o.d. hard drawn copper tubing, laying same on 18 to 24 in. centers, depending upon the temperatures of the room and not to exceed 400 feet per coil. This is, of course, controlled by the static head of water supply and number of bends in the coil. We use standard specification of insulation for zero, but in season carry some of these rooms at 25 degrees below zero, or lower, with high velocity blast freezing.

This has proven to be a very successful method and while rather high in first cost, is far less expensive than breaking out a floor once frozen through. We've had that experience also.

As to the installation of freezers on ground floors, and using no insulation, I must confess first, no experience; and secondly, a bit of skepticism. I sincerely hope that this is what you wanted and will prove helpful. Sorry I can't help on the non-insulated floor question. I'll be glad to furnish more specific data relative the described floor if it is wanted.—LYNN MILLS, Tacoma, Wash.

Conditions Determine Result

You will no doubt receive numerous answers in conflict regarding this subject—principally because a great many natural conditions govern what would happen should freezers be installed with their floors in direct contact with soil.

Installing freezers where the floor is in direct contact with soil, the one great danger is that the heat leakage through the floor—whether insulated or not—will freeze the soil underneath and cause it to expand and naturally since the only place it can move is up, will raise the room floor. The length of time and the rate of the heat loss are dependent entirely on the amount of insulation placed in the floor. The severity of the freezing is also dependent on the amount of moisture in the soil underneath the floor.

Commercial insulation is not a perfect insulator and regardless of its thickness, economically speaking there will be some leakage from the zero room through to the soil temperature. The prevention of freezing in the soil is dependent on the dissipation of the heat into the soil once it passes through the insulated surfaces.—WALTER BERND, Washington, D. C.

Insulate for Low Temperature

Before concrete or insulation is applied to ground surfaces, and after ground has been properly graded a cinder fill six to twelve inches should be applied directly on the graded surface, and through this fill a perforated pipe laid, so that moisture will drain to the outside of the chain wall into a sump pit, which can be emptied from time to time. After this has been done the sub-floor and insulation can be applied.

This method of construction will allow any moisture to be drained off, regardless of heavy rains, rise and fall of ground water level.

The above method can be used where no insulation is to be applied to the floor. However, experience has shown us that in rooms below Zero degrees F. that ice will form, and over a period of six years will cause the floor to raise approximately twelve inches. Therefore it is recommended that insulation be used where cold storage freezer plants are to be constructed on ground floors.—BERNARD GRAFF, New Orleans.

Ventilation Recommended

In answer to question 1, I am attaching a copy of the April, 1948, issue of "Armstrong's Insulator," which contains an article on pages 4 and 5 entitled "Subfloor Ventilation Prevents Frost Heavage." Your question is being answered by reference to this article because it is, in effect, a summary of extensive work done by our Research Laboratory and represents our thoughts on this question. It also contains sketches which probably illustrate our recommendations better than a detailed word description.

In answer to your question No. 2, we do not visualize any conditions encountered in the United States which will allow for construction of a freezer on grade with no floor insulation and yet have no excessive refrigeration loss or trouble from formation of frost. Without insulation to retard the flow of heat, there is an increased refrigeration load necessary to keep the temperature at the floor low enough to prevent spoilage of products which may be stored on the floor. The economics of floor insulation vs. its omission with resultant increase in refrigeration load may be calculated for any given set of conditions. Since the ground temperature in most sections of the United States averages between 50 and 55 F., the difference in temperature between the ground and in the freezer on grade is large enough to make floor insulation necessary.—J. W. LIDDELL, Armstrong Cork Co.

Differences Continue

Question No. 840 is interesting partly because there seems to be considerable difference of opinion as to the proper answer, and those who offer the opinions can rarely submit very much in the way of facts to back them up. I fall in that category because I have fairly definite opinions on the subject and all too few data.

In my opinion, it is risky practice to put freezer rooms on the ground floor even though the subsoil appears to be dry. Within the past year, one of the large insulation manufacturers ran an ad or a series of them advocating ventilation under the floor insulation of a freezer room located at grade. This is presumably adequate protection except perhaps in areas where the changes from freezing to well below freezing are rapid. It is based, of course, on the principle that if you do not want the ground under a floor to freeze, it is necessary to supply it with the amount of heat abstracted by the flow through the floor insulation of the freezer room. Another method has been to install a deep, dry fill of stone or cinders together with the provision of drain tile around the inside of the foundation walls with connections outside so that there could be no rise of water within several feet of the floor slab.

Both of these precautionary constructions seem to serve the purpose but whether they would be effective under all conditions is not definitely known. There is little information available based on experience of what types of soil are likely to produce heaving. It is quite apparant that some are less subject to this than others for by no means do all the freezer floors located at grade come up, yet assuredly some of them do. I can recall hearing of a number of specific instances but I never secured sufficient information relative to the type of ground beneath the freezer room, the ground water level, drainage factors, etc., to feel that I could set down the conditions under which heaving might be expected.

As to the second part of the question, I do not think there is any way of building a freezer directly on the earth without any insulation without having a larger heat loss than is justifiable. Whether heaving takes place or not depends upon the factors mentioned previously. I presume that this part of the question is prompted by the installation of a large freezer space in Texas in a building which reportedly has no floor insulation.—J. F. STONE, Johns-Manville Sales Corp.

NOTE: Mr. Stone enclosed a copy of a report published in England on this subject. It contains much basic data which will be published later.

New Questions

When to Defrost Coils

Question No. 841: In some low temperature rooms refrigerated with pipe coils the ice is practically solid from pipe to pipe which I assume reduces the heat pick-up by the coils. Is there any rule to follow in setting up a defrosting schedule? I assume a small thickness of ice on a coil does not reduce heat conductivity very much?—M.F.

Paint on Shelf Coils

Question No. 842: We have a fish freezing room with shelf coils made of 1¼ in. pipe spaced 6 in. center to center. The fish are frozen in pans placed on these coils. It has been suggested that we cover these coils with aluminum paint in order to preserve them. Is this a good idea? Will it reduce the freezing capacity of the coils to any noticeable extent?—T.J.M.

Compressor Oil

Question No. 843: What is the cause of foaming of oil in the gauge glass on a refrigerant compressor crank case? Does this foaming reduce the value of the lubricant?—K.W.F.

Member Activities

Yakima

By Elmer Toop

The officers elected to serve the chapter during the present year are:

President, Luther Stewart.
Vice-president, Howard H. Peterson.
Secretary-treasurer, Elmer A. Toop.
Recording Secretary, Seth Drake.
Guard, L. L. Anderson.

The Educational Committee is composed of George Tilbury, Chairman, Elmer Toop, Guy Stoutenburg and Emil A. Wahlstrom.

The meeting was devoted to a discussion of the educational plans for 1950. The first subject on the schedule is a study of the different types of cold storage refrigerating equipment including coils and unit coolers. Early discussion centered around the trouble encountered with freezing of apples under drip pans. It was suggested that maintenance of suction pressure at 30 to 35 lbs. gage would bring satisfactory results on a system with a piping ratio of 1 ft. of 2 in. pipe to every 20 cu. ft. of storage space. One fan placed on each bank of coils was also recommended to obtain better air circulation.

At the next meeting a check sheet was distributed to show the cooling surface required by direct expansion coils, brine spray units and air blast units with bare pipe and finned surfaces. Power and other requirements were contrasted and the overall advantages of each system were compared.

The question of odors came up and it was the consensus that cleanliness including the elimination of decayed fruit, dirty boxes and soiled floors and walls would greatly reduce the difficulty. The discussion will be continued in future meetings.

An added feature of the meeting was sound motion pictures: one on Oil Production and Use by the General Petroleum Co., and the other a Scenic Trip to Hawaii produced by the Northwest Air Lines. Both were interesting and entertaining.

Rio Grande Valley

By Armin Doneis

In absence of a prepared lesson, John Muller led an informal discussion to which all members contributed. Electrical Maintenance was one of the topics discussed and corroded fuses and clips, undrained conduits, single-phasing and feed-back, system grounding and ground wires, ground indicators, thermal relays, commutator troubles, dressing and undercutting were discussed at some length.

Then the discussion turned to possible freeze-burn of lettuce and other tender vegetables by intimate contact with subcooled ice being applied immediately after delivery. It was recommended to let the blocks stand until all frost has melted off the outside surface, to assure the ice not being much below 32 degrees before crushing. John Muller described tests and experiments made to determine rate of temperature change at various ambient temperatures. He cited a case where it took 36 hours for temperature of a block of ice to rise 10 degrees while held in a vault with a temperature of 32 F.

At the following meeting Instructor Muller began a series of lessons on Slide Rule Practice which he will teach the chapter jointly with Ray Woolrich. He described the anatomy and function of the slide rule and briefly sketched its advantages over "longhand computations" before entering into the actual operation of the instrument. Members were encouraged to limber up their own "mathematical trombones" and complete the solution of problems which were followed through slowly step by step so all could grasp the fundamentals and practice their hands and eyes. This first session dealt with plain multiplication and locating of the decimal point. Numerous favorable comments were heard at the close of the session concerning the interest and value connected with such good instruction.

In the business meeting conducted by President Woolrich it was determined that two members of the Educational Committee were unable to attend meetings. To meet this situation and assure proper functioning of the committee John Muller and Armin Doneis were named to fill the two vacancies. This committee assembled after termination of the regular meeting for a thorough discussion of the program during the remainder of the year. It was reported that several outside speakers had been tentatively arranged for to discuss such subjects as electrical maintenance, distribution systems, refrigeration lubrication. After the meeting everyone adjourned to the ice plant of the Central Power and Light Co., in Weslaco to enjoy refreshments which were served by John Muller.

Stockton-Modesto

By R. M. Edger

A great deal of interest was created among the membership when we had a speaker from the Cutler-Hammer Co., who gave us an illustrated lecture on electricity and especially the safety switch. Most of us have probably taken this type of equipment for granted but this picture created a great deal more interest. Also shown was the multi-breaker now being used on practically all Cutler Hammer equipment.

The meeting was held in Modesto and we welcomed 3 new members into the chapter: Hank Enns and Thomas C. Kimmel of Stockton and Dee C. McGraw of Modesto.

Chicago

By E. B. Jones

The first meeting of the month was a plant inspection trip to the Industrial Manufacturing Co., which makes fin coils and unit coolers of various types. An excellent buffet lunch was served to the attendants on arrival and they enjoyed a social hour.

A discussion of finned coils and their uses in refrigerating work was given by Douglas Benton of the Industrial Manufacturing Co. He discussed the types of fins and their particular advantages. It was pointed out that the square feet of fin surfaces is only a part of the story because this surface may be much more effective in one design than another. For instance, fin width and thickness are important and this is also true of fin spacing and the completeness of the bond between the tube and fin. The discussion proceeded into installation factors in connection with finned pipe coils, as well as unit coolers. The advantages of the new types of ceiling units were described as better air distribution, slower velocity over the product, lower shrinkage, less objectionable drafts.

A quiz program completed the evening and a number of interesting questions were discussed under the leadership of Instructor Eugene Rytlewski.

San Francisco

By F. H. McLaughlin

The installation of officers for San Francisco Chapter took place on January 11, and was combined with the Annual Ladies Night. The officers for 1950 are as follows:

President, Marshall T. J. Garlinger
First Vice President, W. C. Roberts
Second Vice President, Walter Sandholt
Sergeant-at-Arms, Fred L. Imsand
Treasurer, Orman H. New
Secretary, F. H. McLaughlin

Bill Orton attended to the installation proceedings in great style and Bert McKenna very ably took care of the eats and entertainment. Both jobs were in very capable hands and consequently the evening was a great success for the members and their guests.

President Garlinger has announced a new program for 1950 that will call for periodic council meetings. These council meetings will be attended by the Chapter Officers and chairmen of important committees. It is felt that such an arrangement will greatly help to increase the calibre of the regular meetings along program and educational lines.

N.A.P.R.E. Department

Los Angeles

By Fred Herr

Appearing in his dual role of chairman of the local committee and vice-chairman of the national membership drive, W. R. Burnett gave members of Los Angeles Chapter an injection of verbal penicilin on the night of February 15 which inspired them to such enthusiasm (it pains us to say this) that it bodes ill for any other chapter which may be casting covetous eyes at the 1950 pennant.

On the national level, Burnett explained that the pyramid club idea, which was operated so successfully in Los Angeles in acquiring three straight pennants, will be employed in this year's national drive.

Locally, it was announced that a special prize is to be awarded to the Los Angeles man who signs the most new members between January 1 and March 1. The slogan "Every member get a new member" was adopted as the chapter slogan. With the chapter already past the 300 mark in membership, this would mean 300 new members by convention time this fall, and it would be a poor bet right now to wager that that man Burnett will not put it over.

W. S. Tittle and E. W. Smith were initiated at the February 15 meeting. It was reported that Capt. H. M. Royden who was hospitalized in January with serious stomach trouble, has returned to his home and is on the way to recovery.

Deep-sea fishing enthusiasts will be given two opportunities this summer to indulge in their favorite sport. President Dale Rycraft reported that Frank Cooper of the Cork Insulation Co. had volunteered to make arrangements for one or more expeditions from Newport Harbor, providing a minimum of 15 to 20 participants could be assured. A showing of hands disclosed that enough members were favorable to the idea to make it necessary to schedule two excursions. Accordingly, the baracuda and yellowtail off the coast of Southern California will experience two uncomfortable daye on June 17 and August 5, when groups composed of such stalwart salt-water characters as Ed Nelson, Dale Rycraft, Rudi Kettler, Ray Burnett, George Paulick, Bill Losch, Ralph Moore and "Admiral" Frank Hooper himself sail forth to engage them in mortal combat. And don't be surprised if Burnett reels in a couple of new members from somewhere out beyond the three-mile limit.

Emmett T. Quinn reported that issuance of the chapter's membership directory was lagging behind schedule due to failure of members to hustle in their listings. He urged that listing cards be returned quickly so that the directory can be sent to press around March 1. The proceeds from advertising space are to be placed in the 1950 convention fund.

The speaker of the evening was Dr. William H. Easton, associate professor of geology of the University of Southern California, who talked on "Predecessors of Dinossaurs and Man," illustrated with kodachrome slides. The program, while devoid of refrigeration angles, except for an iceberg or two in the film, was described by Secretary Donald Byl as ". . . an evening of educational diversion consisting of a fascinating lecture by a brilliant speaker on the ascendance and present or future extinction of the various species of animal and human life."

George Paulick conducted the preliminary class from 7 to 8 p.m. The subject was refrigeration as applied to storage space, consisting of commentary by Instructor Paulick, and illuminated slides.

The meeting originally scheduled for February 1 was cancelled to permit NAPRE members to accept an invitation of the National Association of Power Engineers to join them in a visit to the steam generating plant of the Southern California Edison Co. at Rendondo Beach, Calif. This visit took place on the night of February 9, with some 250 attending, of whom 80 were NAPRE members.

Detroit

By L. L. Adams

The regular meeting of Detroit Chapter was held at Carl's Hall and was preceded by a dinner. The special feature of the meeting was a sound motion picture on making and shaping of steel, produced by the United States Steel Corp. The movie took up the story from the mining of the iron ore and carried it on to the finished product, ready to go into service in many industries throughout the world. It proved to be a very interesting and entertaining movie.

The evening was concluded with a discussion of refrigeration problems.

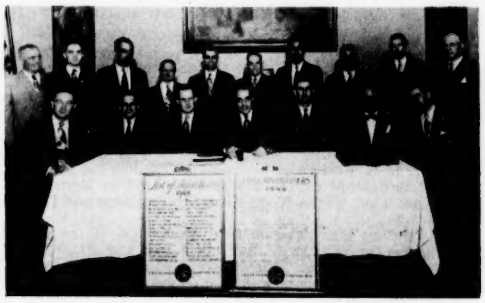
New Orleans

By Leo J. Vivien

On January 11 the officers to serve New Orleans Chapter for the year were installed by Walter J. Cooke and Carl Brindell. Mr. Cooke did an excellent job, commending the officers for their past interest on behalf of the chapter and asking that they continue their good work. The officers are:

President, F. X. Gillio.
First Vice-president, Louis W. Howat.
Second Vice-president, B. J. Mancuso.
Third Vice-president, James Chaisson.
Treasurer, G. J. Whitman.
Recording Secretary, Leo J. Vivien.
Financial Secretary, Bernard Louviere.
Sergeant-at-Arms, Walter C. Bernard.
Educational Chairman, Bernard Graff.

Board of Directors: Edwin G. Ford, Frank L. Chase, C. F. Kaupp, Thomas O'Connor, Julius Prager and A. E. Wegener.

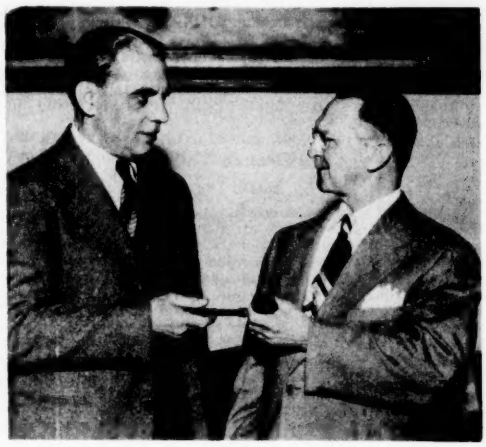


Officers and Directors New Orleans Chapter

Seated Left to Right: Leo J. Vivien, recording secretary; B. J. Mancuso, 2nd vice-president; L. W. Howat, 1st vice-president; F. X. Gillio, president; James Chaisson, 3rd vice-president; G. J. Whitman, treasurer; B. Louviere, financial secretary.

Standing: Walter J. Cooke, installing officer; W. C. Bernard, sergeant-at-arms; B. Groff, educational chairman; E. G. Ford, chairman of the board; F. L. Chase, Thomas O'Connor, C. F. Kaupp, J. Prager, A. E. Wegener, members of the board; C. E Brindell, publicity chairman.

Messrs. Ford, Gillio, Graff and Vivien were presented with gifts in appreciation of their services rendered during the year 1949. The seventy members present enjoyed the evening and the sandwiches, beer, and soft drinks that were served. Our good friend Julius Prager provided a surprise addition to the refreshments which was enjoyed by everyone.



President Frank Gillio receives the gavel from his predecessor, Edwin Ford.

Memphis

BY CHARLES CONLEY

The special speaker at the first meeting of the month was R. R. Perine, Jr., field engineer for the Gulf Refining Co., who discussed the history of oils and their uses in refrigerating plants. The characteristics of the various types of lubricants were analyzed and recommendations were given for application in the industry. Mr. Perine had a number of samples for demonstration purposes and also illustrated his talk with charts and blackboard drawings. Assisting him was John F. Dantoni another Gulf field engineer. We welcomed Edward R. Gordon, engineer for the Meadowbrook Dairy to membership.

A most interesting evening on Safety was presented by Erlwood Barden, director of safety for the Memphis plant of the International Harvester Co. He said his plant had a perfect safety record and declared that this was because they preach and teach safety in every possible way, as well as provide guarded equipment and carefully engineered plant and processes. The work to prevent accidents extends to the smallest piece of machinery and tool.

The safety work is also extended into the communities where the plant employees live. For instance safety is promoted and taught in civic clubs. Experience has shown, Mr. Barden said that an injury to an employee away from the plant is worse than one that occurs on the job because the employee loses his pay and goes into debt, as well as becoming disgruntled. He said that everyone responsible for safety in any plant should also try to prevent accidents in employees homes and while they are away from work, as well as when they are on the job.

The program was concluded with a sound motion picture "Miracle of Paradise Valley" and a question and answer session. The movie told a story which encouraged every one to be conscious of safety and accident prevention. It had many worthwhile things in it and inspired all of us to greater interest and activity in safety work.

Fresno

BY M. PEDERSEN

The committees appointed to handle the various phases of the chapter work during the year are: Educational Committee, M. G. Campbell, H. W. Bauder, C. E. Spillsbury, C. A. Fernald and K. W. Findley. Membership Committee, C. Campbell, O. J. Brown, J. B. Culwell, and J. Muse. Entertainment Committee, K. W. Findley, J. J. Imperatrice and W. E. Minkkinen. Auditors: C. E. Spillsbury and C. C. Lovejoy.

The educational portion of the program was devoted to the Question Box and general discussion. One subject which brought out considerable interest was the Question Box question on condenser equalizer lines, their function and when they are absolutely necessary.

Tacoma

BY ELMER JOHNSON

Through the cooperation of the Tacoma Asbestos Co., an excellent film on the application of insulation to cold storage structures was presented. It showed the infiltration of moisture through walls is a large factor where insulation fails and stressed the proper application of a vapor seal on the warm side of the wall. The method of applying this seal and erecting the insulation to obtain a permanent job was shown. A discussion on Foamglas and other insulation was presented by Mr. Sayer of the same company as a supplement to the film. He described the many recent applications of Foamglas in the industrial plant and the home. We welcomed Charles E. Shockley to membership.

Refrigerating Engineers Round-Up St. Louis, Mo. March 25, 1950

A CONFERENCE on refrigeration plant operation has been arranged for engineers in the midwest by the St. Louis Chapter, NAPRE. This one day meeting on Saturday, March 25 will give the attendants a concentrated preparation for the season ahead. In addition the program furnishes items of interest on general refrigeration subjects. Headquarters for the conference is the Kings-way Hotel, 108 N. Kingshighway, a convenient location on the west side of St. Louis.

The purpose of the conference is to tell engineers how to get the most out of all types of refrigerating equipment. It will be presented in practical, everyday language so that all those in attendance will obtain information and ideas they can use to improve plant performance and economy. There will be three sessions in the conference: morning, afternoon and evening. Provisions have been made for group luncheon and dinner in the headquarters hotel.

Venneman Lectures

Featured in the conference program are two lectures to be presented by Professor H. G. Venemann, Purdue University and Chairman of the NAPRE Educational Committee. His subject in the morning session will be "Measuring Refrigeration Plant Performance." It will tell the engineers how to read and apply refrigerant charts and tables to their daily plant operating problems. This careful checking of the system will permit reduction in operating and maintenance expense and save money in overall operation. In connection with the subject Professor Venemann will point out the material available in NAPRE texts for use in this work.

At the afternoon session Professor Venemann will give directions for "Making Gages and Thermometers Pay Off." It should be realized he declares that plant instruments have great value apart from providing figures to be placed on log sheets. The data should be employed to check and analyze plant operations. In his second lesson he will tell what data is neeessary for analyzing operating results and show how to track down sources of costly irregularities.

Problems Solved

A Question Box session on plant operation will round out the afternoon session. Five engineers of long experience will form a panel to provide answers for specific problems presented. They are: R. C. Kahdeman, Chas. S. Lewis Co. (pump manufacturer); Eugene Kessler, Chief Engineer, No. 1 Plant, Falstaff Brewing Corp.; C. M. Renner, Chief Engineer, St. Louis Dairy Co.; O. J. Ruel, Head, Electrical Dept., David Ranken School of Mechanical Trades and G. F. Uplinger, Master Mechanic, Swift & Co. These informal discussions by men who deal with operating problems every day have always proved to be helpful and interesting.

New Uses for Standard Compressors in Low Temperature Evaporation Processes will be discussed by Edward Thompson, Mojonnier Bros. Co. Plants and equipment recently developed for the concentration of fruit juices and liquids at low temperature have caught wide attention. Mr. Thompson will discuss this subject as it applies to citrus, dairy and other industries.

Following the group luncheon, Emerson Brandt, NAPRE Secretary, will address the group under the title "Once Is Not Enough." It is expected that he will bring together and present a number of the aspects of practical refrigerating engineering gleaned from 16 years as secretary of the association and a considerably longer time in operating phases of the industry.

Following the conference dinner the group will turn to subjects of general interest. Ralph Copp, formerly Senior Consultant for the Dairy Branch of a United Nations

Agency, will recount his experiences in Europe. The information about refrigeration developments and applications in other countries will prove interesting and informative.

The St. Louis Chapter invites all interested engineers to attend this conference. They will be especially pleased to welcome NAPRE members from other locations, but the invitation is extended to both members and non-members.

Registration will begin at 8:30 a.m., and the program will get under way one hour later. Those coming from a distance will wish to arrive the night before. Out of town attendants should send their reservations direct to the Kings-Way Hotel, 108 N. Kingshighway, St. Louis. Inquiries or requests for additional information should be sent to L. V. Fleiter, General Chairman, NAPRE Regional Conference, 3302 Lawton Ave., St. Louis 3, Mo.

Conference Schedule

8:30 a.m. Registration

9:30 a.m. Call to Order
"New Uses for Standard Compressors in Low Temperature Evaporation Processes" By Edward Thompson, Mojonnier Bros. Co.
"Measuring Refrigeration Plant Performance" By Prof. H. G. Venemann, Purdue University, Chairman NAPRE Educational Committee

12:15 Luncheon
Address, "Once Is Not Enough" By Emerson Brandt, Secretary, NAPRE., Technical Editor, ICE & REFRIGERATION

2:00 p.m. "Making Gages and Thermometers Pay Off" By Prof. H. G. Venemann

3:30 p.m. Question Box Session on Plant Operation
Panel: R. C. Kahdeman, Chas. S. Lewis Co.
Eugene Kessler, Falstaff Brewing Corp.
C. M. Renner, St. Louis Dairy Co.
O. J. Ruel, Rankin School of Mechanical Trades
G. F. Uplinger, Swift & Co.
Mail advance questions to L. V. Fleiter, 3302 Lawton Ave., St. Louis 3, Mo.

6:15 p.m. Conference Dinner.
Address: "Refrigeration and Engineering in Europe" By Ralph Copp, Meyer Blanke Co.

9:00 p.m. Adjournment

Get Set For Membership Race

THE membership contest in 1950 is led by experts who have demonstrated their ability. The top men belong to Los Angeles Chapter which has been breaking records each year to come out on top in the annual contests. Head man is Chairman William Finnegan of the NAPRE Membership Committee. Working with him is Ray Burnett as Vice-chairman. He was the leader of the Los Angeles drive which brought in more than 100 new members last year.

William J. Finnegan, Chairman, National Membership Committee

Joining with the mis President Emmett Quinn who is emphasizing membership building along with af ull program of association activities during his term of office. This group of leaders is enlisting the cooperation of all the chapter officers and especially the Chairmen of Membership Committees. They emphasize the great value of individual work. That is the way consistently good results have been obtained over a period of several years in Los Angeles. At the end of the season it added up to a large total for the chapter.

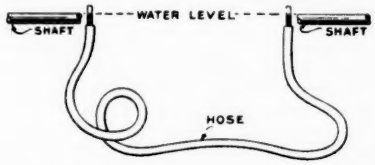
The general rules of the contest will be the same as in former years. Points in the contest will be given for new members secured and a bonus will be added equivalent to the percentage of renewals. In order to be fair to both small and large chapters the awards will be made on the basis of total points and also on percentage.

It has been emphasized that individual effort is most important in membership building. Extra effort by individual members—both chapter and member-at-large—will be encouraged by a spectacular group of individual prizes. Vice Chairman Ray Burnett will pull the curtain on this section of the contest next month. Meanwhile it is a good idea to get set and get to work. All of the new members brought in will count for the individual and the chapter.

ENGINE ROOM POINTERS

How To Do Any Leveling Job with a Hose Full of Water

SLIP gauge glasses into each end of an ordinary garden hose as indicated in this sketch, and fill with enough water so that the level will show in each glass. You are now ready for any leveling job, and you can do it with the utmost accuracy. In the sketch a shaft is shown as an example, but the method is applicable to almost any leveling job.



When filling the hose with water, make sure that all air is gotten out of it. Hold it in a U-position when filling, if possible. Do not attempt to fill it by immersing the hose in a tub of water. Also, one end of the hose must not be warmer than the other end when leveling. If the water at one end is warmer it will be lighter in weight and the level will not be true. In other words, get rid of all air and use water of the same temperature throughout the full length of the hose.—F.S.W.

It Was a Noisy Centrifugal Pump

IN the writer's city there was a noisy centrifugal pump which operated with a suction lift. The engineer asked whether it would be all right to admit air into the suction.

Air admitted into a suction line sometimes does eliminate noise, but the writer does not recommend that procedure. The noise is sometimes due to the fact that the suction lift is excessive causing what is known as "cavitation" in the impeller. Air in the suction is generally **bad** because it reduces pump efficiency and it is also likely to promote corrosion. In other words admission of air into the suction is a makeshift method. The preferable way is to determine the cause of the noise and then eliminate the cause. If the noise is due to excessive suction lift the pump can probably be lowered sufficiently so that the lift will be of correct height. Do the bearings rattle? If so, repair the bearings. There always is a best way to handle a repair job.

The Ice Industry

National Association of Ice Industries

Executive Offices
1706 L St. N. W., Washington 6, D. C.

PRESIDENT
H. O. McLain, Chicago, Ill.

EXECUTIVE SECRETARY
Mount Taylor, Washington, D. C.

Mechanical Owners Do Use Ice—Survey Shows Market for Big Tonnage

THERE are roughly 28 million mechanical refrigerator owners in the country. With present frequency and quantity of purchase, as shown in the survey described in this article, these people are buying auxiliary ice to the extent of around a million tons a year, with practically no effort on the industry's part to get the business. This market offers a premium tonnage. If all ice companies were really merchandising processed ice to these people and were aggressively going after the business with local advertising, and were making processed ice readily and easily available at all times to this class of trade, it would be possible to add sales of five to ten million tons of premium priced ice per year.

New markets for ice is a subject of great interest to all ice distributors. Tying in directly with this, the survey analyzed on this page shows that mechanical refrigerator owners will buy ice IF it is made available and convenient.

In cooperation with ice distributors in all sections of the country, the Research Department and the Personnel Training and Marketing Department of the National Association of Ice Industries conducted a survey on mechanical refrigerator owners to determine the market they offer for the sale of ice. The survey covered cities of all sizes in all geographic areas. Nearly five thousand homes were visited in all classes of neighborhoods and income brackets. Chief findings of the survey are summarized as follows:

Summary of Findings

Do the users of mechanical refrigerators buy ice? A total of 4,704 replies were received to this question and almost one out of every two mechanical refrigerators owners (48.4 per cent) buy ice. In some areas the percentage was as high as 80, while in others it was as low as 20.

Where do they buy it? Of the 2,345 people who answered this question, 7 per cent buy from a delivery truck, 93 per cent purchase from outlets from which they must carry ice home. Of those who carry it home, more than 61 per cent buy from ice plants and the remainder from vending machines, retail stations and stores.

What equipment do they use? In one market 52 per cent of those who answered have ice chests; in another, 25 per cent own deep freezers; from the country as a whole about 7 per cent indicated that they have chests and about the same number own freezers. Since equipment for holding the ice is lacking in most of these homes, the ice is purchasd for immediate use.

Why do mechanical users buy ice? Returns on this show that they usually buy for auxiliary needs primarily for three purposes (1) special occasions like parties (2) picnics (3) for making ice cream. Eighty-five per cent of this ice is used for these three purposes. Of the 52 per cent who said that they never buy ice, over 91 per cent gave as their reason that their mechanical refrigerator supplies enough ice, or they have no use for it. Ninety per cent of them buy from once a week to once a month in the summer and much less frequently in the winter.

Conclusions from Survey

Some ice companies have tried to cater to these customers by establishing ice delivery routes but the survey showed little interest in this service. Eighty-seven per cent said they were not interested in regular delivery service. Considering the uses for which ice is purchased this answer is not too surprising. After all it is being purchased for special occasions and average families would not go in for enough of these activities to warrant a supply of auxiliary ice at all times.

A number of companies have considered trying to reach these customers through selling of processed ice in retail stores. The survey showed that when such service is available, they are still spasmodic purchasers, and the retail store, although it ranked favorably with other well-known methods of distribution was by no means a majority choice.

A question was asked as to where they would like to buy processed ice—at the food store, delivered at home, through vending machines, at the ice plant, retail ice stations, liquor stores, drug stores or some other place. Of the 4,363 replies to this question, 27.5 per cent were interested in delivery and 72.5 per cent designated outlets which would mean that they did not object to hauling the ice home. Despite the fact that over 61 per cent of these people now get their ice at the ice plant and are consequently more familiar with it than any other source of supply, only 19 per cent specified that they would like to buy it at the ice plant. Thus it appears that outlets in shopping centers are favored by this group and by two to one over delivery.

NOTE: Information in this article was supplied in a paper presented by L. L. Swartz, Indianapolis, Ind., at the 1949 convention of the National Association of Ice Industries.

Measured in terms of household ice customers who rely on ice for all of their refrigeration requirements, these people are small unit purchasers. Regarding the size package the 25 lb. package ranked first, the 10 lb. package second and the 5 lb. package third. However the 5 lb. package was popular in only a few markets. Little interest was shown in the 50 and 100 lb. package.

Regarding the type of package, buyer preference for the wet-strength paper bag was spectacular—76 per cent of the 3,937 people who answered this question preferred the paper bag while 18.5 per cent showed preference for the wax carton. Little interest was indicated in the cotton bag or other materials.

A question was asked as to when they usually buy or when they would prefer to buy auxiliary ice. Of the 4,067 replies, 77 per cent indicated preference in the afternoon or evening, with 57 per cent specifying the evening. Ninety-two per cent buy from once a week to once a month in the summer and much less frequently in the winter. This timing is an important consideration in choosing the type of outlet. Where stores are not open in the evening, it would appear that some other means of making ice available to customers should be given consideration by the distributors.

Preference as to types of processed ice varied widely by markets; however for the country as a whole, cubes ranked first, crushed ice second, and sized ice third, percentage being 42, 30 and 28 respectively.

Honor Roll Certificate Awarded

Acknowledgment is hereby made of the Subscription received from
And notice given that said company's name is inscribed on the
Honor Roll
OF ADVANCE SUBSCRIBERS TO THE
100th Anniversary Campaign
1950 NATIONAL ICE PROMOTION PROGRAM
1850 ONE HUNDRED YEARS OF ICE PROGRESS 1950

TO ALL ice companies who subscribed in advance to the 100th anniversary advertising campaign of the National Association of Ice Industries, an honor roll certificate was awarded. A complete list of the companies so honored was presented at the annual ice industry convention held in New York last November. The certificate reproduced above measures 5½x8 inches.

Modern Ice Man to Rescue When Old Man Winter Fails

THE International Ski Jump meet was scheduled to be held at Salisbury, Conn., January 7, 1950. World famous jumpers were there to participate. But Mother Nature neglected to oblige the management with the snowfall that is usually to be expected in that part of the country at that time of year. So, the Torrington Ice Co. was called on for the second consecutive year to supply the snow for the ski slide.

This was accomplished by hauling 165 tons of block ice to the jump where it was fed into the crusher and the resulting "snow" was blown over the slide. The jumpers were most enthusiastic with their praise of the type of surface which the blown crushed ice produced. Eleven thousand spectators were thrilled by the spectacular jumps which were photographed and local radio stations gave a vivid broadcast.

On January 21 and 22, the Mohawk ski area which is leased from the State of Connecticut by Walter Schoenknecht, an ex G.I., was opened to the public, and it is the first time in history that such a large area had been covered with crushed blown ice. This project used 400 tons and several hundred ski enthusiasts took to the slope. Every one was unanimous in their praise of the surface produced. It was so fast that wax was dispensed with. Two ski tows, 1200 ft. long and six ft. wide were in use and the slope which was covered was 1300 ft. by about 60 ft. wide.

The Torrington Ice Co. has had a number of inquiries from people who are interested in winter sports and many of them have decided that in the future they can set a definite opening date for such events regardless of weather conditions. Indicating the publicity value of this new use of ice, the New York Daily News of January 23 used the entire back page for pictures and a story on the Mohawk area project.

Closeup view of "snow" being blown from ice crusher.

Showing method of spraying ski-slide with artificial snow; stockpile of ice in foreground.

National Ice Marketing Institute Graduates Last Class

THE fourth and final class in the current series of Washington classes of the National Ice Marketing Institute was graduated on Friday, January 20, at a final dinner at the Hotel Sheraton. Certificates of graduation were awarded to fifteen class members ranging in age from 22 to 57 and hailing from such widely separated places as New York and Texas, Ohio and South Carolina.

Class President Bob Hargie, Kalamazoo Ice & Fuel Co. Kalamazoo, Mich., presided at the dinner. The other class officers were: Vice-President, Bill Ehrig, New State Ice Co., Oklahoma City, Oklahoma; Secretary, Hub Stackhouse, Horry Ice Co., Conway, S. C.; Treasurer, Ed Seale, Galveston Ice & Cold Storage Co., Galveston, Texas.

Tom Douglas, superintendent of National Ice Marketing Service announced the top grade winners in the course as follows: Gil Bush, Bill Ehrig, Bob Hargie, and Hub Stackhouse. Certificates of graduation were presented by Professor Edwin L. Stevens of George Washington University, popular special lecturer at the Institute, who congratulated each man on his accomplishment and each company represented on its progressiveness in providing their employees with this training.

Those receiving certificates were as follows: Clifton Baillio, Ice Service Delivery, Inc., Alexandria, La.; Gilbert Bush, Jr., Gallipolis Ice Co., Gallipolis, Ohio; Herman L. Diehl, City Products Corp., Pittsburgh, Pa.; John J. Dundon, Jr., Eldredge Coal & Ice Co., Auburn, N. Y.; William A. Ehrig, New State Ice Co., Oklahoma City, Okla.; Robert B. Hargie, Kalamazoo Ice & Fuel Co., Kalamazoo, Mich.; Ellsworth Marshall, Jacksonville Ice & Cold Storage Co., Jacksonville, Ill.; Henry Mathisen, City Products Corp., Chicago, Ill.; John W. Morrell, Hygeia Ice & Fuel Co., Spartanburg, S. C.; John G. Pool, Jr., N.A.I.I., Washington, D. C.; Richard Schroder, Georgia Ice Co., Savannah, Ga.; Edward H. Seale, Galveston Ice & Cold Storage Co., Galveston, Texas; H. F. Stackhouse, Horry Ice Co., Conway, S. C.; Henry A. Thomas, Southern Ice Co.; Charleston, S. C.; Francis T. Trotter, Maple City Ice Co., Norwalk, Ohio.

Plans for the National Ice Marketing Institute's basic field school of one-week duration have met with enthusiastic reception. At the end of January, five contracts had been signed with the unit Associations and negotiations with others were under way. The field schools will be operated as an activity of the Personnel Training and Marketing Department of the National Association of Ice Industries.

Pioneer Ice Business Sold

ONE of the oldest business concerns in Dover, Del., discontinued operations recently when John H. Behen & Co., was purchased by the Diamond Ice & Coal Co. of Wilmington, Del. The Behen concern owned and operated the Service Ice & Storage Co.

Established before the turn of the present century by the late John H. Behen, Jr., the concern was more recently engaged in the coal, ice and storage business. For many years the concern's ice supply was procured from the plant known at that time as the Dover Ice Co. About twenty five years ago a new ice manufacturing plant and storage house was constructed.

Founded by the late John H. Behen, Jr., the business was conducted by him until his death when it was passed on to his son, the late John H. Behen, and following his death the business passed on to his three sons, James J. Behen, Sr., John Behen, and Bernard Behen, all of Dover. The group continued to operate the business until it was sold.

Singing Commercials for Ice Industry Programs Now Available

SINGING commercials, popular in radio, are now available to members of the ice industry, says an announcement of the Public Relations Department of the National Association of Ice Industries.

Those who attended the National ice convention last fall will recall hearing three lively ice jingles and agreed that they were catchy original tunes with bright lyrics that will put "What Three-letter Word" on the lips and in the minds of all ice customers. This, it is suggested, is an excellent opportunity for ice distributors to tie in with their National Public Relations program.

These spots on radio programs will be made available if a sufficient number of companies want them to justify their production. If enough orders are received, the three jingles will be issued on a single record, so that one, two or all three can be used according to needs.

The jingles will run about 45 seconds, leaving ample time for the local annoucer to use fifteen or twenty words about the company, giving name, address and other details, and still keep within the time and cost limits of a one-minute spot.

The music was written especially for the ice industry by an experienced composer in radio and television. The jingles were made by a group of fourteen singers and musicians. Radio spots have proved to be one of the most productive and economical forms of advertising for ice companies in many localities and singing commercials have proved o tbe a mos effective way of using these radio spot programs.

Indiana Driver Training Programs

THE driver training program sponsored by the Indiana Association of Ice Industries through the cooperation of the Indiana University Department of Distributive Education has had an enthusiastic reception by the ice companies who have participated to date. The program has been given by G. W. Hookey for Shelbyville, Greensberg and Aurora at Greensberg; for Madison, Jeffersonville and New Albany at Jeffersonville; and for Princeton and Oakland City at Princeton. A number of similar meetings are scheduled throughout the state.

In addition to the driver training program, several Indiana ice companies are participating in a supervisory program also being conducted by the University. Among the current participants are the Polar Ice & Fuel Co. of Indianapolis and Ice Service, Inc., of Evansville. Instructor for these programs is Earl P. Tregilgus. Both participating companies in both of these programs feel they have been excellent and that this instruction can do much to provide job efficiency in their companies.

Folder to Keep Grocers Sold on Vegetable Icing

IN RESPONSE to many requests, the Public Relations Department of the National Association of Ice Industries is considering the preparation of an inexpensive, two-color, illustrated folder for distribution in stores which feature vegetables on ice. It will explain briefly how ice protects the garden-freshness and vitamin-richness of produce. This folder will provide a service for all food stores which handle iced vegetables. They can either drop one of the folders in the shopping bag of each shopper, hand it out, or make it available at the produce display case.

Ice Company Observes 50th Anniversary

OBSERVING the 50th anniversary of incorporation of the Mutual Ice Co., Alexandria, Va., a dinner was held at the George Mason Hotel at which 44 employees were present. O. A. Reardon, secretary of the company, acted as toastmaster and presented service pins to all employees having 25 years or more of service.

The following men, with their years of service indicated, were presented gold service pins: Harry Hammond, 50; Wm. Thomas Penn, 49; Roscoe W. Russell, 38; Aubrey C. Clark, 34; James C. Richards, 33; John Augustus Bell, 32; Mark L. Price, 31; Oliver A. Reardon, 31; James D. Hammond, 30; Robert C. Baker, 30; Montgomery T. Chisley, 29; James B. Williams, Jr., 27; Charles T. Sorrells, 27; and Henry H. Robinson, 27.

Harry Hammond, vice-president, and O. A. Reardon, secretary, pose for photograph at 50th anniversary dinner of Mutual Ice Co., Alexandria, Va.

Harry Hammond, vice-president of the company gave an interesting talk on the company's progress from its beginning in 1874. Mr. Hammond recalled that in 1874 the nation was in the grip of a depression, with factories closing down, thousands of people out of work, and many broke and hungry. It was during this time that Reid and Reardon ventured into the ice business, bringing natural ice into Alexandria from the Kennebec River in Maine by sailing vessels.

In 1880 J. W. Hammond entered the ice business in Alexandria in a building in "Market House Alley." Mr. Hammond bought up several small ice companies in the city and cut ice from local ponds, and occasionally the river. In 1893 Harry Hammond entered the business with his father and in that year they built one of the first ice factories in the United States. In 1900 the Hammonds and Reardons pooled their interests and incorporated as the Mutual Ice Co.

Local business was good and refrigerated car-icing was increasing each year. In 1902 an ice storage house was built in the Southern Railway yards and ice was shipped from the Union Street plant to this one. The business soon outgrew this installation and in 1906 Potomac Yard was built and opened to all rail freight traffic. Here a much larger storehouse and a 16-car length, car-icing platform was built.

In 1912, to meet the ever increasing demand for car icing, a modern car-icing plant of 60 tons daily capacity and a storage capacity of 4,000 tons was erected on the site of the present plant. This was continually expanded until World War II came along, and brought a tremendous increase in the icing of all types of fruits and vegetables. During the war the plant was again expanded and increased to a daily capacity of 500 tons. The platforms and storage houses had been increased prior to the war, thereby making the facilities capable of handling 132 carloads of perishable freight at one time.

Following Mr. Hammond's talk several of the employees responded.

Swift Advertises Poultry on Ice

FOR the first time in the history of advertising, fresh poultry will be advertised on a national scale this coming April. A two-page, full-color advertisement in Life will spark the beginning of Swift & Company campaign to feature their tender-grown chickens, according to a recent announcement by McCann-Erickson, Inc., advertising agency for the company. The chicken that depends on ice for processing and display will be advertised in Life, Saturday Evening Post, Better Homes & Gardens, and True Story. All indications lead to the impression that a million dollar advertising campaign is getting underway.

Illustrations will be similar to those that were used in the 1949 campaign—fresh poultry on crushed ice. Copy will give the advantages of eating a better grade chicken which is now available any day in the year . . . and tell consumers that it may be seen displayed on crushed ice for better protection.

A well organized series of sales promotion and merchandising materials and ideas will make salesmen and dealers aware of this campaign. Swift personnel will hold sales meetings, conduct cooking schools, and set up outstanding point-of-purchase display material showing the use of ice.

National Poultry Leader Week will begin on March 27 for the Swift's Sales Organization. Prior to that time every Swift salesman will be working for at least 30 to 60 days to set up displays, send out promotion pieces, and get all activities underway to make the national magazine and radio advertising successful. In all display material crushed ice will serve as background for Swift tender-grown poultry. Don McNeil and the Breakfast Club will help to introduce this new product on Friday, March 31.

At a recent meeting of the Operating Committee of the National Association of Ice Industries the Swift Poultry advertising program was outlined by F. X. Timmons, advertising and publicity director. All present expressed enthusiasm for the Swift campaign and instructed Mr. Timmons to follow through and cooperate fully with the Swift organization. Consumers will be invited to look for fresh poultry on ice in the ice industry's national consumer magazine advertising.

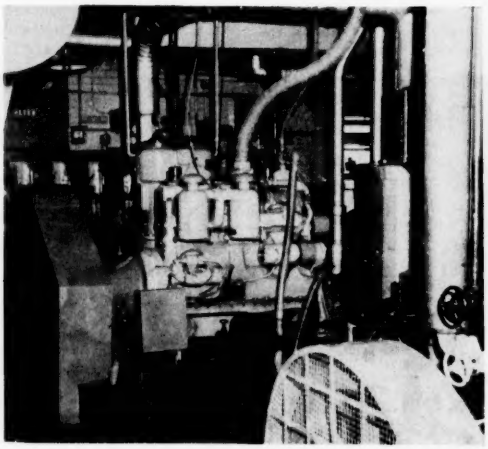
In an effort to encourage retailers to feature Swift poultry on ice, some of the NAII trade paper advertisements will illustrate this method of merchandising chickens. "It seems logical to assume that progressive icemen will cooperate with Swift & Company salesmen to get maximum benefit out of the entire campaign," said a spokesman for the operating committee. Surely, all concerned can mutually increase profits through tie-in merchandising and selling.

One-Trip Wet-Strength Paper Bags Make Ideal Containers for Users And Distributors of Processed ICE

THE wet-strength one-trip paper bag has been designed especially for cubed and sized ice. In the above pictures are shown their various uses and advantages. They can be safely exposed to the punishing effects of warm rains or cold snows. Because they combine light weight with wet strength they are easy to handle in the plant and from the delivery truck. Wherever icing is necessary for vegetable displays, fish counters, fountains, and bars, the bags are an invitation to do the job quickly, neatly, and often. Customers like them because they offer an easy and convenient way to carry iced fruits and vegetables home.

Ice Plant Operates Skating Rink

THE American Ice Company, Sacramento, Calif., has overcome the seasional handicap common to the commercial ice business by operating an ice skating rink next door to its ice plant. Except for the three peak summer months, the rink is open continuously and provides the company with additional revenue when the ice business is at its lowest ebb. During the summer months the rink is closed so that all of the equipment can be used to produce commercial ice.



Diesel engine and compressor which furnishes refrigeration for American Ice Company skating rink and ice plant.

Doing double duty in this enterprise is the Cummins 150 hp Diesel engine that drives a York ammonia compressor. The compressor has an 8½ by 8½-in. bore and stroke, two cylinders, and can produce 20 tons of ice per day. Besides the Diesel, which turns at a maximum rpm of 1400 and has run almost continuously since it was installed in April, 1948, American also uses two electric-driven compressors. Total output capacity of the plant is 37 tons per day.

The diesel keeps the 10,500 square foot rink frozen by itself. In the winter season, American runs the engine at 900 rpm for only ten hours to freeze the rink completely and keep it in good shape for a 24-hour period.

Canadian Ice Company Reports All-Time High Ice Sales

THE mild winter of 1948-49 brought demand for ice from the Empire State Ice Company, Limited, Windsor, Ontario, to an all-time high in 1949, according to F. T. Wheeler, manager of the company. Mr. Wheeler said last year's mild winter prevented the cutting of natural ice in this area, with the result that demand for artifical ice rose. The Empire State Ice Company now produces 350 tons of ice per day in its plant on South Cameron boulevard.

The ice manufactured in the plant is sold to retail ice dealers and to railway and refrigeration companies, where it is used to cool much of the perishable goods shipped into Windsor area each year. The company confines itself to the manufacture and wholesale distribution of ice, maintaining no retail delivery service.

Ice Company Honors Veteran Workers

THREE employees of Evansville Ice Storage Co. Inc., Evansville, Ind., with a total of 98 years of service were presented with wrist watches at a Christmas luncheon. Those who received the service awards were John Pauli of 315 Pennsylvania Ave., warehouseman, who joined the firm in 1906; James Kendall, 786 Lime St., engineer, with 29 years service and Albert Bailey, 2621 Fulton Ave., maintenance department, employed since 1923. Christmas bonuses rated on length of employment also were distributed to 25 workers.

For long service, three employees of Evansville Ice & Storage Co. Inc., receive wrist watches from William Fleig, (left) president. Recipients shown in the picture were James Kendall, engineer, with 29 years of service; Albert Bailey, maintenance man, 26 years, and John Pauli, warehouseman, 43 years.

At this meeting the announcement was made that William Fleig had been appointed president of the company. Mr. Fleig came to Evansville,from Gary, Ind. in 1937. He has been vice-president of the Evansville Ice & Storage Co. Inc., for the last three and a half years.

Texas Ice Plants Merged

THE purchase of four ice plants and refrigerating stations in the Stephenville, Tex. area has been announced by Harry Park, owner of the Stephenville Ice Co. Mr. Park said the deal was consumated with the Community Public Service Company of Fort Worth and included other properties. Consideration, he said, was in excess of $100,000. The ice plants purchased are located at Hamilton, Comanche, Rising Star and De Leon. The refrigerating stations are located at Gorman and Cross Plains. The new headquarters company will be known as the Ice Service Company, Park said.

Course for Ice Plant Engineers

A SHORT course for ice plant engineers has been announced by Michigan State College, Lansing, Mich., to be taught by Donald Remwick, professor of refrigerating engineering. It will run with no maximum time limit, at a cost of $3.00 per day per person for class room instruction. An extra charge will be made for outside personnel and for any books required, the books to become the property of the student. The announcement states there are plenty of facilities at Lansing for board and room.

Iced Display Case Offers Attractive Setting for Perishable Products

A NEW "turret-top" display case has been designed to help ice distributors increase crushed ice sales. As shown in the illustration below these cases provide an attractive setting for display of perishable merchandise.

The exterior, made of "Leatherwood", a Masonite product, comes in a standard finish of antique ivory designed to harmonize with any decorative scheme. The top is of plexi-glass which together with the fluorescent lighted compartment below immediately draws attention.

The turret top is 5½ inches high at the crown. Under this is a galvanized ice tank of 60 lbs. capacity for crushed ice, on top of which the user may place a bed of moss or other substance to act as a wick or sponge to draw up humidity and cold air from the ice below. On top of this may be displayed such products as flowers. Other products such as salads, sea-foods, poultry, etc., are better displayed directly upon the bed of ice.

New Display Case for Showing Products Preserved With Crushed Ice

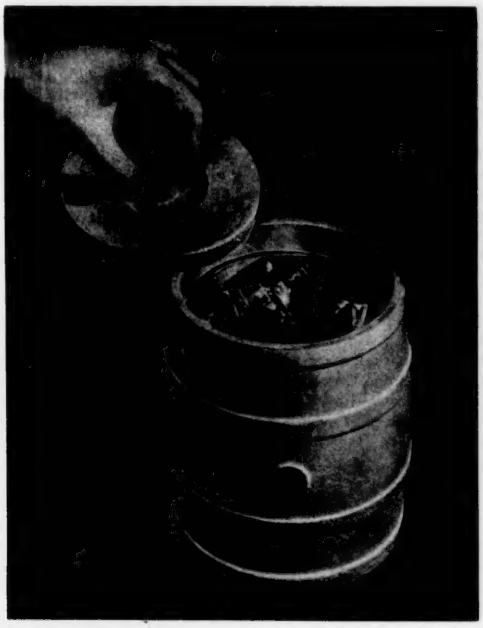
This ice tank has an open bottom in which is placed a galvanized rack of expanded metal with drip-deck and baffles below, thus providing a means of supplying refrigeration to the glass-enclosed display section below. This lower section holds a temperature of 50 to 55 degrees, and is suitable for the display of flower arrangements, orchids, ceramic figurines, vases, etc.

Access to lower compartment is by means of a hinged insulated door in rear. The whole is insulated with 2 inches of fiber glass and the glass window of display compartment is approximately 22 x 22 inches. Display section in both models has fluorescent lighting.

A larger model has a serving counter 26 inches wide and suitable for wrapping or for cash register. It also has a dried storage compartment on the right side under the counter. It has two doors, one to the refrigerated display section and one to the dry storage section.

Ice Barrel Keeps Ice Cubes Fresh

A SMALL barrel, made of sponge rubber for keeping ice cubes, is an attractive advertising novelty that many ice companies are using in display booths and other merchandising. This small barrel will keep the cubes ice



fresh and crystal clear for several hours. By pre-cooling it, the cubes will last for 12 hours or more. Since it is pliable, sticking cubes can easily be broken free. It comes in four shades of pine green, redwood, Balboa blue and desert tan.

Metropolitan Ice Plant Closed

AFTER operating for 31 years, the ice plant of the Metropolitan Utilities District, Omaha, Nebr., was closed in January. This plant started operation in 1918 when the utilities district of the water department loaned $206,000 to the new Ice Department to build a plant. The aim, at that time, was to provide ice to small users at an economical price. The plant began making money from the start and in fourteen years had repaid its loan and had marked up profits of more than $686,000.

In 1920 there were in Omaha approximately 400 peddlars and ice stations in operation while in 1949 there were approximately 35 routes and 50 stations in operation, according to Fred W. Thomas, director of the utilities district. During the war years demands for ice brought it into the black but aside from that period, it continued to lose money and plant reserves had been shrinking at the rate of about $125,000 a year since the end of the war.

The question of closing the plant had been an active issue with the board of directors for some time, some of them holding out for continuation of the plant under new procedure which, it was stated, would enable it to continue producing ice at a profit. But the majority of the board favored the more drastic expedient of closing and their opinions ultimately prevailed.

Reports From Unit Ice Associations

Oklahoma Association of Ice Industries, Annual Convention

THE 46th annual convention of the Oklahoma Association of Ice Industries was held at the Mayo Hotel, Tulsa, Okla., January 22, 23 and 24. Many of the older men of the industry of the state were encouraged greatly by having a large number of younger men present at the convention.

The convention sessions began Monday morning at 10 a.m. called to order by President W. B. Moran of Shawnee. There were a large number of exhibitors present; in fact, the largest group showing at an Oklahoma convention for a number of years. These were introduced individually, and responded with a few remarks concerning their exhibits and what they considered the outlook for equipment for the year 1950.

Then followed the annual address of the president, covering the problems and the possibilities confronting the industry. He was followed by an address by J. P. Battenberg, president of the Pioneer Reserve Life Insurance Co., Oklahoma City, on the "Sources and Values of American Liberty,"—how it came into being and its value to liberty-loving citizens. His address was well received by the attentive audience.

Convention Luncheons

On both Monday and Tuesday there was a convention luncheon for all delegates to the convention. There also was a luncheon for the ladies present. The dinner dance on Monday evening was enjoyed by a large number of guests. There was something new in the way of entertainment, as the Entertainment Committee had arranged for some exhibition square dancers.

Mount Taylor, executive secretary of the National Association of Ice Industries, gave a splendid analysis of the ice business for the year 1949 and made some practical suggestions as to what can be done to regain some of the tonnage lost to small ice makers and other forms of competition. He included in his address reference to the minimum Wage and Hour Law which went into effect January 25.

The engineers' conference held Monday afternoon attracted a good attendance and held the interest of those present throughout. The principal address was presented by Mr. Irwin, assistant professor of Mechanics, A. & M. College, Stillwater, Okla. This was followed by a panel discussion conducted by Howard Jamison, chief engineer of the Southwest Ice and Dairy Products Co., Oklahoma City; Warren C. Downing, chief engineer of the Peoples Ice Co., Tulsa; and George H. Koehne, chief engineer of the Tulsa Cold Storage Co., Tulsa. This discussion proved to be a very interesting part of the program, and it was followed by many questions from the floor.

Paul Liebmann, son of the founder of the Liebmann ice properties in Oklahoma gave an address on the subject "Wonders of Ice." Mr. Liebmann spoke eloquently and forcefully on the subject, and made everyone in the audience proud that he was a manufacturer of such a product as ice. The speaker referred to many instances in which ice renders indispensable service. He also referred to the fact that since ice is such a wonderful food product, it should be handled in a careful manner. Ice, of course, is a self cleansing product, but it should be handled in such a manner that the public could never question its purity, he said.

A panel discussion analyzing the problems facing the industry and to emphasize some of the ways by which ice refrigeration service can be increased was conducted by W. D. Beard, Ponca City; F. F. McCormack, McAlester, Frank Drum, Fort Smith, Ark., and C. E. Simmon, Oklahoma City. The discussion was followed by comment, then questions from the floor and it was one of the most informative features of the convention.

An interesting and informative paper on basic relationship between costs and price structures in the ice industry was presented by Paul H. Andres of Oklahoma City, a member of the board of directors. Mr. Andres' paper was based on his paper on the same subject presented at the National ice convention which will be published in full in an early issue of ICE AND REFRIGERATION.

E. C. McClintock, owner-manager of the Crystal Ice and Frozen Food Lockers, Bartlesville, gave an address on "How to Recapture the Domestic Market." Mr. McClintock said his answer to this question had not been arrived at from his own recent experience in selling, nor from his own market research, nor through any form of revelation, but rather it had been forced upon him, the same as it was being forced upon all ice distributors. The answer, he said, is a more conscientious merchandising of ice-using appliances.

Ice for Poultry

A. A. Remling, salesman for Swift and Co., Oklahoma City, discussed the use of ice for packing poultry. He announced that Swift and Co., is about ready to proceed with a national advertising campaign presenting the advantages of poultry, packed in ice. Mr. Remling's talk was accompanied by a film illustrating the poultry packing process. This talk and the accompanying film gave the audience a comprehensive view of the possibilities for an increased use of ice for this purpose.

Dan Prager, director of the Personnel Training and Marketing Department of the National Ice Association gave a talk on the sales and merchandising training course available from the National Association. Mr. Prager said there is serious need within the ice industry for a nation-wide movement to encourage and plan more active mechandising of all forms of ice and ice-using appliances. Briefly he emphasized the need of training of all personnel in the production and delivery of ice and the fullest possible use of the Merchandising Forum "to get the feel" of ice merchandising problems in the field . . . to discuss with merchandising leaders what may be needed—not now being produced by the National Association—to meet these . . . to get frank expressions of how the National Association can cooperate more fully to solve these problems and bring about a closer relationship between the National and unit organizations.

Officers and Directors

Following the report of the nominating committee, the following officers and directors were elected for 1950:

President, W. B. Moran, Shawnee

Vice-president, Clarence Page, Purcell

Vice-president, Earl Johnson, Oklahoma City

Directors: Marvin K. Mills, Oklahoma City; Paul Liebmann, El Reno; Ralph Hood, Guthrie.

Georgia and Southern Ice Exchange—Annual Joint Convention

THE annual conventions of the Southern Ice Exchange and the Georgia Ice Manufacturers Association were held in joint sessions at Atlanta, Ga., January 18-19.

One of the interesting parts of the convention was an address by a representative of Swift & Co., describing the use and advantages of crushed ice for packing freshly dressed poultry. For each of the two billion pounds of chicken to be processed this year, he said, there is a potential market for two pounds of ice, making a total possible outlet for one million pounds of ice.

R. W. Florrid, executive secretary of the Atlanta and Georgia restaurant associations, said that the best refrigeration for both public and industrial restaurants is ice because it keeps non-frozen foods best, through preventing shrinkage, loss of flavor and color. Particularly the newly dressed poultry packed in ice is high quality. Pointing out the importance of the restaurant business to the ice industry, Mr. Florrid said that restaurants of the country prepare and serve 12 per cent of all foods for human consumption. He said there is a definite need for ice service men to dress so as not to offend customers being served in restaurants. He urged the ice industry to make more complete use of the sales training materials that are available and said this training is paying off big in the restaurant business.

Ice Appliance Sales

H. C. Conklin, ice appliance sales manager for the Southern Ice Co., Charleston, S. C., said that for the past fifteen years his company's ice-appliance display room has never been closed and that from 1940 through 1949 they had sold more than $317,000 of ice-using appliances. Sales in 1948 were below 1947 but his son attended the National Ice Marketing Institute and came home with ideas and plans which were put into effect, including a sales training course for the service personnel, and the results of this plan, backed by advertising, was effective immediately.

Ice appliance sales in 1949 not only were more than in 1948 but they hit the near all-time dollar and unit peak, and tonnage held its own, despite the fact that ice sales for the country as a whole showed a decrease of some 12 per per cent over the previous year.

Vegetable Icing

F. Kilbourn, in a talk on vegetable icing, said that the surest approach to fresh food store managers is the profit motive, and they are primarily interested in acceptance by their customers. They are more interested in being able to sell all their produce and in decreased labor costs than they are in the vitamin retention role and other similar facts pointing out the better nutritive qualities of fresh and iced produce.

Food retailers, he said, cite as one of the reasons for not using vegetable icing counters, the high cost of ice-using equipment and ice service. He also pointed out that when a local manager of a chain store made a success of his iced vegetable department, he was usually transferred to a bigger job and then the education of the manager had to start all over again. Another thing that is needed, he said, is a constant educational job to show store managers the need for adequate icing at all times and to prove to them that a penny saved in ice is not real economy.

The suggestion that a lot of ice could be sold by on highway re-icing service for trucks carrying perishable foods to northern markets was made by M. E. Pittman, Helena-McRae, Ga. Mr. Pittman himself has provided this service, which includes elevators for servicing bunkertype trucks and slinger icing for truck cargoes that require body icing. This service, he said, is paying off, although it costs considerable more than it was thought it would when started about a year ago.

Wm. Adcox, Dalton, Ga., gave an interesting talk on care and maintenance of delivery trucks. Mr. Adcox operates sixteen ice routes. He gave an analysis of his route costs which showed that each truck operated profitably from seven to eleven months out of the year in his community in northern Georgia; that route shifting, truck replacement and extra-help-watching, as compiled in weekly route reports, not only reduce company expenditures but also increase the income of driver-salesmen. His drivers are paid a salary or a commission with a guaranteed minimum weekly earning.

Management's job, he said, is to train the employees to help them to develop pride in their customary responsibilities and to keep constantly in mind the safety obligation they have to themselves, to the public and to the company.

Representing the National Association of Ice Industries, Wm. T. Jobe, legal counsel, spoke on national legislative activities; Dan Prager discussed the setup of the Personnel and Marketing Department, with special reference to the new training programs now available; David J. Copeland, Richmond, Ky., also spoke from the national viewpoint on the services available from and the public relations work being done by the National Association of Ice Industries.

Officers and Directors

Officers and directors of the Southern Ice Exchange were elected as follows:

President, C. Louis Crossfield, Gadsen, Ala.

Vice-president, W. F. Robertson, Savannah, Ga.

Directors: E. H. Diemmer, Ga.; E. L. Gunn, Jr., Ga.; H. H. Hopgood, Tenn.; C. D. Castleberry, Ga.; R. V. Sisk, N. C.; J. D. Mallary, Ala.; J. F. Kilbourn, Fla.; George L. English, S. C.; Harry F. Creamer, Ga.; Conrad B. Romberg, Ga.; and J. K. David, Fla.

Officers and directors of the Georgia Ice Manufacturers Association, were elected as follows:

President, Milton McLain, Buford, Ga.

Vice-president, Harold Clotfelter, Rome, Ga.

Directors: H. D. Hopkins, Atlanta, chairman; E. L. Buyler, Camilla; Dan Bullard, Macon; Joel Knight, Atlanta; Lambert Williams, Claxton; M. E. Pittman, McRae; D. C. Hancock, Cartersville; Willard T. Adcox, Dalton; Chas. L. Henry, Atlanta; Conrad B. Romberg, Gainesville; W. D. Garvin, Sr., Savannah; James Ford, Columbus, and Glenn R. Henderson, Augusta.

Canadian Association Booklet Tells Value of Association Work

UNDER the direction of Mrs. Mildred Croft, secretary of the association, the Canadian Association of Ice Industries has issued a mimeographed booklet giving a brief history of the association, background of its work and some of the services it performs. Among other subjects it covers publicity and promotion, national exhibitions, commercial use of ice, labor studies, public relations and conventions and conferences. It is an interesting and informative answer to the question, "of what value is an association?"

Virginia Ice Manufacturers' Association Annual Convention

THE 35th annual convention of the Virginia Ice Manufacturers' Association was held January 25 and 26 at the Monticello Hotel in Charlottesville, Va. There were 88 registrations from 25 different ice companies and ten supply manufacturers. The co-hosts in Charlottesville were the Cassco Corporation, the Elliott Ice Co. and Inland Service Corporation. The convention was a big success because of the cooperation of those who had charge of the arrangements.

Harry Hammond of Alexandria, Va., C. R. Irving and A. C. Yancey of Charlottesville were honored as being the three only known living charter members. Mr. Hammond gave a brief sketch of the association's history. Both Mr. Hammond and Mr. Irving have remained active in the ice industry but Mr. Yancey was unable to be present.

All talks were interesting and aroused many questions among the listeners. The Wage Hour Law Amendments presentation by William T. Jobe, general counsel of the National Association of Ice Industries was well worth the trip for a lot of ice men. Other talks were by W. J. Dugs, branch manager, Washington and Virginia district, Frick Co.; Eugene Luck, vice-president Wortendyke Manufacturing Co.; Professor Arthur F. MacConochie, senior professor of Mechanical Engineering, University of Virginia; and Guy W. Jacobs, director, Public Relations Department, National Association of Ice Industries.

Entertainment included an informal dinner-dance with O. A. Reardon as master of ceremonies, two association luncheons, a tour for the ladies, and a ladies' luncheon at the Keswick Country Club.

Officers and Directors

Officers and directors for the coming year were re-elected as follows:

President, V. L. Keyser, Covington
First Vice-president, J. C. Epley, Charlottesville
Second Vice-president, J. F. Elliott, Jr., Charlottesville
Secretary-treasurer, H. H. Snyder, Alexandria

Directors: R. F. Butler, Richmond; Harry Hammond, Alexandria; W. E. Hyde, Clarendon; Llewelyn Jackson, Winchester; V. V. Jinkins, Ashland; F. A. Mitchell, Newport News; S. C. Newman, Farmville; L. R. O'Hara, Yorktown; J. E. Overbey, Danville; O. A. Reardon, Alexandria; N. C. Taylor, Tappahannock; T. B. Witt, Roanoke; and W. M. Land, Norfolk.

Illinois Association of Ice Industries

By WM. D. WRIGHT, Secretary

BUSINESS during January and the early part of February was quiet in all lines. Right now it looks like we might have an early spring which may help out in ice sales. A little sales effort on the part of ice men might also help.

The Illinois Merchandising Council will hold a meeting at the Rogers Hotel, Bloomington, Sunday March 12 starting at 10:00 a.m. An outside speaker or speakers will be on the program and it promises to be a very interesting meeting. The industry needs to be reactivated in the fields of employee training and merchandising and this will be the activity on which the Merchandising Council will concentrate this year.

Sometime following the Merchandising conference, a Managers' Conference and an Engineers' Conference will be sponsored. Response to invitations to enroll in the National field training course were too few and too late, and we are advised that the Institute has filled all available dates for the spring and can accept no more until fall.

Indiana Association of Ice Industries

By ROBERT W. WALTON, Secretary

THE annual convention of the Indiana Association of Ice Industries will be held at the Lincoln Hotel, Indianapolis, March 6, 7 and 8. The program is developed around the theme, "50% More in '50" and it will endeavor to give those present the inspiration and knowledge that will enable them to realize 50% more in '50.

Although convention sessions do not start until Tuesday morning, the convention formally opens at noon Monday. The highlight of Monday's activities will be the annual get-together in the Travertine Room of the hotel starting at 6:00 p.m. This will provide an opportunity to meet with old friends of the Indiana ice industry and get acquainted with the new members. The party will include buffet, refreshments and entertainment.

Jackson New Michigan Secretary

Edward Jackson

AS ANNOUNCED in the February ICE AND REFRIGERATION, Edward Jackson is the new secretary of the Michigan Ice Industries Association, assuming the post formerly held by Wm. J. Campbell. Mr. Campbell gave up his work because of pressure of his other duties. Mr. Jackson has been connected with the ice industry for thirty years, all of that time with the Kalamazoo Ice & Fuel Co., Kalamazoo, Mich., of which he is now vice-president.

California Ice Merchandising Forum

AN ICE Merchandising Forum has been established by the California Association of Ice Industries similar to those organized in many other states under the leadership of the National Association of Ice Industries. The organization meeting was held February 8 at Los Angeles. The response to this announcement was met with a great deal of interest and enthusiasm.

Keynote speech was delivered by E. F. Condon of Los Angeles. A number of additional talks were made by members of the industry on building ice tonnage, organizing ice appliance sales, sales contests, rental plans, and other subjects pertaining to selling ice and ice appliances.

Missouri Ice Manufacturers Association

By V. A. ESPHORST, Secretary

THE regular spring meeting of the Missouri Ice Manufacturers Association Merchandising Forum will be held Tuesday, April 11, at the Missouri Hotel in Jefferson City, Mo. An interesting program on the merchandising of ice-using appliances will be presented.

Florrid New Georgia Secretary

THE Georgia Ice Manufacturers Association and the Southern Ice Exchange has named Richard W. Florrid executive secretary of the two associations. He is also executive secretary of the Georgia Restaurant Association. New offices of the associations will be located at 11½ Forsyth St. N. W., Atlanta, Ga.

Frozen Foods
Reg. U. S. Patent Office
COVERING EVERY PHASE OF THE QUICK FREEZING OF PERISHABLE FOODS—PREPARATION, PACKAGING, FREEZING, STORAGE, DISTRIBUTION, DESIGN, CONSTRUCTION, EQUIPMENT, OPERATION OF LOCKER PLANTS.

Frozen Food Industry Holds Annual Convention

FOLLOWING the successful practice of last year, all convention arrangements for the frozen food industry were under the direction of an all-industry committee composed of the presidents of the national associations, a representative from the local Chicago association, and a representative from the supply companies. The fourth annual meeting was held at the Congress Hotel, Chicago, January 31 to February 3, 1950.

The associations represented at the meeting were the National Association of Frozen Food Packers, the National Wholesale Frozen Food Distributors Association, the National Preservers Association and the National Food Brokers Association. Each of these held separate annual business and educational sessions.

1950 Officers National Association of Frozen Food Packers

President, E. J. Watson, Mt. Vernon, Wash.
Vice-president, T. E. McCaffrey, Seattle, Wash.
Vice-president, G. O. Bailey, New York
Secretary-treasurer, L. S. Martin, Washington, D. C.

All Industry Luncheon

Thursday was devoted to big general sessions at which all segments of the industry heard a line-up of nationally known speakers. One of the high points of the convention was an all-industry frozen foods luncheon Thursday noon. At this luncheon a distinguished merit award was presented to Mrs. Fuller Warren, wife of the governor of Florida on behalf of the state of Florida by William M. Walsh of Pittsburgh, president of the National Wholesale Frozen Food Distributors association and chairman of the convention. This award is given annually for the most outstanding contribution to the frozen food industry and this year it was based on the development by the State of Florida of frozen citrus juice concentrate.

The main address following the luncheon was given by John C. Brennan, vice-president and secretary of the Midwestern Division, The Great Atlantic & Pacific Tea Co. Other speakers were John Logan, president of the National Association of Food Agencies, J. A. Numero, president of the U. S. Thermo Control Co., and Hunter Watkins of the Colonial Frigidways, Inc.

Mr. Logan pointed out that one big job of the frozen foods industry is to induce homemakers to make more use of frozen foods. This home consumption offers a big field if quality is maintained, prices are made attractive, distribution lowered, and if the consumers know the uses and advantages of frozen foods. Increased production, he said, will take them out of the luxury class and get them into volume distribution. An unfavorable phase in the situation, he said, is the fact that in the big stores frozen foods have not been carying their share of profit, but it is hoped that continued promotion and increased knowledge on the part of consumers will move these foods into a more profitable position. These stores, he said, can carry only a limited number of items and this poses another necessity, that of reducing the number of items.

Another need of the industry, he said, is the provision of low temperature storage in stores as well as warehouses. This will make possible less frequent pickups from the warehouse and quicker and more efficient deliveries. Consumers, he concluded, generally like frozen foods but they insist on top quality. If they purchase food of low-grade quality they will not come back. He suggested that the frozen foods industry put on a well-organized program to show consumers the high quality and other good features of frozen food.

Suit Against A & P

John C. Brennan's address was primarily about the anti-trust suit that has been brought by the federal government against A & P. Mr. Brennan alleged that the company was being attacked primarily as an attempt by anti-trust lawyers to reduce competition in the food field. The food business, he said, is the most competitive business in the nation and this competition exists, not only in the retail level, but in wholesaling and processing and at the raw material level itself. He pointed out that there are roughly 400,000 grocers in the country, of which chain stores operate some 25,000 outlets and 130,000 independent grocers are banded together into voluntary chains. Every retailer and every wholesaler and processor is trying to keep his quality and service up and the costs and prices down so that he can successfully compete for the retailers' patronage. Monopolies, he said, just aren't possible in this situation, because nobody controls the source of supply or the retail outlet in the food business.

Hunter Watkins gave a talk on refrigerated trucking service. Mr. Watkins said that railroad equipment for shipping frozen foods has not kept pace with other improvements and this, together with the necessity of moving vast amounts of frozen foods, has brought truck refrigera-

tion into the picture. He described refrigerating equipment designed for use in trucks which maintains a constant zero temperature. Extensive test runs of this equipment have been made from Tampa to Los Angeles, Yakima, Wash. to New York, San Francisco to Kansas City, Los Angeles to Boston and others. This equipment, he said, would provide a transportation facility that will be vitally needed in the transportation of increased volumes of frozen foods.

Truck Cooling Unit

J. A. Numero said that his company now has overcome "the weakest link in the chain," the lack of controlled temperatures on railroad freight cars. He announced that the company has developed, and tested, a gasoline-operated cooling-heating unit which guarantees coast to coast shipping at a uniform temperature, whether it is 10 degrees below zero or 50 degrees above. He described the tests which have been made in the United States and Canada during the last year, in which newly-equipped railroad cars travelled more than 50,000 miles without a major breakdown. As a result of the tests, he said, the Fruit Growers Express, in conjunction with the Burlington Fruit Express and the Western Fruit Express, have placed orders for the new unit to be installed in some of their cars this spring. The equipment to give controlled temperatures now is available, he said, and it is up to frozen food distributors and packers, to demand that the best equipment is used in handling their products.

Production Techniques Symposium

A symposium on production techniques was held by the Packers Thursday morning. The subject of this symposium, the chairman pointed out, was very important for the future of the industry.

J. P. King, agricultural manager, Birds Eye-Snider, talked on the integration of field and raw product schedules with successful production. The frozen food industry, he said, had learned a great deal from the canning industry but it is even more important that the frozen food packer start with a quality product. To get high quality crops into the packing plant on schedule, the plant must start with the grower. These growers, he said, will cooperate if they understand what the packer wants and needs and it is up to the packer then to make adequate contact with the growers through their field men. They should also have available, pre-cooling and storage facilities, since it is necessary to keep all raw products under refrigeration from the time they are harvested until delivered to the plant.

Roy M. Hagen, California Consumers Corp., Los Angeles, Calif., gave an interesting talk on the keeping of records as a means of controlling production and material. Mr. Hagen exhibited six main record sheets as follows: (1) Daily receipts of produce with size and condition and description of samples taken. (2) Daily finished production record with description of samples and record of quality. (3) Daily production record, uniform for all products. (4) Daily cost data showing daily cost of processing. (5) Storage and shipping record. (6) Completed sack cost with recapitulation of total costs of the different departments and processes.

These records, Mr. Hagen said provide valuable information on growers, their harvesting dates, quality of product furnished, and other information that may be needed at a later date. At the end of the season conferences of all heads of departments and field men are held, at which their experiences are reviewed, including mistakes and difficulties and means of eliminating these mistakes and avoiding future similar difficulties.

H. C. Emerson of the Cumberland Warehouse Corp., Seabrook Farms, Bridgeton, N. J., presented an interesting paper on the mechanics of handling materials in production and storage. In quick freezing, he said, the main objects in handling of raw materials are speed and care, speed in getting the product from the field and processed and care in keeping the product from becoming bruised or crushed so that it will present an attractive appearance when packed.

From the field, products should be transported at frequent intervals to the processing plant. When containers are piled on pallets, a fork lift truck does a fast job of placing the entire pallet load on or in the body of the truck which is to take the product to the processing plant. At the plant they are unloaded by fork lift truck and immediately rolled to the start of the processing line. In the case of machine harvested products, the same method may be used as with hand harvested products. Where there are great distances between the field and the plant, some processors set up precooling rooms or accomplish precooling in transportation by covering each container layer with crushed ice.

With labor rates what they are, the primary object should be to evolve continuous processing methods so as to do away with the manual transfer of the product from one processing point to another. From the time the product enters the plant through preliminary grading and sorting, through washing and cleaning, through blanching and cooling, through final inspection and sorting, and after all this into the package, the less crisscrossing and rehandling there is, the less the costs will be, and the better the product will be.

Mr. Emerson said he was primarily a warehouseman and welcomed the opportunity of mentioning the warehousemen's usefulness to the frozen food packer. Quoting from a publication of the United States Department of Agriculture on refrigerated warehousing as a vital link among frozen food distributors, Mr. Emerson pointed out that one of the fundamental ideas behind the freezing of foods is to increase the storage life of the fresh commodity. In this respect it can be seen that the refrigerated warehouse is indispensable in the marketing of frozen foods. The time spent in a warehouse by a frozen commodity is perhaps of longer duration than all the rest of the time from processor to consumer. Thus, the effect of storage on the quality of the product and on the cost of marketing is of extreme significance. The refrigerated warehouse functions in two major capacities in the marketing of frozen foods. First, it serves as a facility for storing frozen products from one producing season to the next, and second, it aids in their wholesale distribution.

Plant Layout

Dr. E. W. Eichelberg of the Fairmont Canning Co., Fairmont, Minn., gave a talk on plant layout. Dr. Eichelberg said that progressive food processors are attacking the problem of costs, particularly through continuous processing and more efficient materials handling and the present trend of labor and materials costs, and are placing a new emphasis on the importance of engineering in food plants. Product handling can be held to a minimum by carefully placing equipment and a well thought-out floor plan. Walls of the plant should be smooth-surface and painted a pleasing color. Some ceilings are now being constructed of transite and asbestos, which are resistant to steam, moisture and mold.

Regarding refrigeration equipment, Dr. Eichelberg called attention to the great increase in efficiency of such equipment. A few years ago, he said, engineers made a practice of installing double the recommended equipment in order

to attain the degree of performance required, but now, he said, it is common practice to make installation of recommended equipment with the expectation that it will provide the efficiency required. The engineer or food technician, he said, finds it necessary to evaluate the suitability of a particular type of freezer for an individual product, as well as the variety of products it is intended to freeze. The freezing process, he pointed out, affects both the color and appearance of the frozen product. The future of the industry, he indicated, will not be in the ability of more plants as much as the internal expansion and the development of processing facilities in the plant.

Annual Meetings

The annual meetings of the National Association of Frozen Food Packers and the National Wholesale Frozen Food Distributors Association were held Wednesday, February 1.

At the annual meeting of the Packers, the following officers were elected:

President, E. J. Watson, Mt. Vernon, Wash.

Vice-presidents, T. E. McCaffery, Seattle, Wash.; G. O. Bailey, New York.

The National Wholesale Frozen Food Distributors association elected the following officers:

President, Alvin W. Langfield, Oakland, Calif.

Vice-presidents: Arthur Richards, Boston; H. A. Greenberg, Atlanta; W. L. Pavlovski, Chicago; O. Casperson, San Francisco.

Secretary, W. Carlton Eacho, Washington, D. C.

Treasurer, George Bickley, Philadelphia.

The general sessions Thursday were preceded by group meetings on Tuesday and Wednesday.

Research and Standards Symposium

What research has meant and will mean in the future to the frozen food industry was discussed at a symposium held by the packers Wednesday morning.

Dr. J. L. Heid, director of Research of the Florida Citrus Canners Corp., said that for each new food product which becomes a success on the market, a million ideas are conceived, a hundred thousand preliminary tests are made, a thousand ideas are carried through some degree of development and a hundred hopefuls are launched upon the stormy seas of competition. This illustrates, he said, that food technology has become an increasingly important factor in shaping our economy and food tastes in the last fifty years. Before a new product can be brought to the market, Dr. Heid said, several basic questions must be answered. Among these are whether the new food fills an existing demand; is the flavor, appearance, and food value good, and is the product easy and convenient to use.

Other points to be considered, he said, are whether raw materials are available, and whether the potential gains offset the probable cost of development and the risk of failure. Even after the research department has conducted the preliminary tests necessary before a product can go into production, Dr. Heid continued, further surveys and help must be given to the production department through the early states to insure a stable and acceptable item.

Other speakers at this symposium were A. W. Dutcher, research and standards, National Association Frozen Food Packers who discussed "Industry's Place in Preparing Food Standards;" John H. MacVey, counsel, National Association Frozen Food Packers, who talked on "Current Activities of the Food and Drug Administration;" and Dr. H. C. Diehl, director, Refrigeration Research Foundation, Los Angeles, who discussed "University Research and the Frozen Food Industry."

Plant Facilities

A panel discussion was held by the Distributors on frozen food plant facilities Wednesday morning. At this discussion it was brought out that public warehousing facilities generally are inadequate for frozen food storage. This condition, the panel agreed, is encouraging wholesale frozen food distributors to establish their own storage plants. One distributor reported plans for a storage plant to cost $120,000 which he expects will pay for itself in about eight years.

The panel also heard two federal government experts describe what the United States Department of Agriculture considers a model frozen foods distributing plant. It is designed to allow the distributor to maintain a one month supply of frozen foods at all times.

Panels on Distribution and Costs

Two major sessions conducted Tuesday covered operating costs as they relate to consumer prices, and distribution of frozen foods through chain stores in the United States. The afternoon panel on distribution of frozen foods through chain store outlets took a serious view of current pricing practices and came up with three major areas of agreement as to what might be expected in the future. Serving on the panel were W. L. Pavlovski, Beatrice Foods, Chicago; Thomas E. Conrady, Lakeland Fruit and Produce, Minneapolis, S. A. Kyte, City Foods Co., Detroit; and **Hubert N. Arons, First National Stores, Hartford, Conn.**

Of major importance was the fact that independent retail sales outlets account for from 75 to 85 per cent of total sales volume in frozen foods as compared with chain store volume of from 15 to 25 per cent, the panel agreed, and indicated that so-called preferential pricing for chain stores did not seem feasible. It also was agreed that while chain stores are now selling only about 20 basic items, they will add to those lines as they add equipment.

Third major point on which the panel agreed was that chain stores could not purchase and distribute to the consumer through retail outlets any more economically at present than the existing frozen food wholesale distributors.

High Cost of Distribution

At the morning session, a panel of five experts tackled the problem of high distribution costs in their phase of the frozen food industry and came up with a series of recommendations for cutting the existing 16 per cent of gross sales income average for the industry to something closer to the ideal operating cost of about 12.5 per cent of gross sales incomes.

Major among the reasons given by the panel for the high cost of distributing frozen foods were the small retailer and high administrative costs. It was pointed out that it costs as much to supply a small grocery store with a $10 or $15 orders as it does to deliver frozen foods in comparatively large quantities.

In terms of percentages of gross sales income, the panel agreed that the medium sized frozen food distributor suffered most with a 17.5 per cent cost factor. Small distributors were paying about 15.6 per cent of gross income in operating costs while the large wholesaler came close to the industry average of slightly more than 16 per cent.

Reducing Costs

The panel members recommended that to alleviate these high cost producing conditions the distributing industry must (1) concentrate on building small retail sales into greater volume sales outlets, (2) must cut administrative costs, and (3) must reduce storage costs.

Press Conference

A preview of new products and an analysis of future trends in the American frozen foods industry was presented at a special press conference held Monday, January 30, the day prior to the opening of the convention.

William M. Walsh of Pittsburgh. Pa., president of the National Wholesale Frozen Food Distributors, Inc., and chairman of the convention planning committee spoke for the industry. He pointed out that last year the nation consumed two billion pounds of frozen foods, a jump of 38 per cent over 1948, and this rapid growth is expected to continue this year as more and more retail outlets are provided. Although new specialty items, such as quick frozen pies and complete meals, which only require heating, are being developed every year, he said, the business will continue to grow through the mass sale of the basic foods. He added that the virtual elimination of the time spent by housewives in the kitchen may come in the next 50 years, but that the frozen foods industry is not based on dreams of the future, but a record of what the American people want and will buy in volume.

In comparing the sales of frozen foods and the fresh products, Mr. Walsh cited figures of 1938 sales, 1948 sales, and the projected figures for 1958. Frozen orange juice concentrate accounted for five per cent of the total in 1938, 11 per cent in 1948, and is expected to account for 93 per cent of the total in 1958. Similar figures for three other popular items are: Strawberries, 1938, 11 per cent; 1948, 27 per cent, and 1958, 41 per cent; Peas, 1938, seven per cent, 1948, 37 per cent, and 1958, 74 per cent; Lima beans, 1938, 20 per cent; 1948, 48 per cent, and 1958, 78 per cent.

Many of the problems of the industry still remain, he said, but are being solved one by one. The biggest problem continues to be the transportation of frozen foods from coast to coast, and the maintenance of a zero temperature throughout the trip. When that problem has been finally settled, the industry will have taken a big step forward, he said.

W. L. Pavlovski, secretary of the convention and past president of the Quick Frozen Foods Association of Chicago, said that the five basic items, frozen fruits, vegetables, poultry, fish and frozen juice concentrates, will continue to be the bread and butter of the frozen food industry for at least the next decade.

Frozen Food Industry Convention To San Francisco in 1951

THE 1951 frozen food industry convention will be held in San Francisco from February 27 to March 2, according to an announcement by E. J. Watson of Pictsweet Foods, the new president of the National Association of Frozen Food Packers and Chairman of the 1951 Frozen Food Industry Convention Committee. The decision to take the 1951 convention to San Francisco was reached jointly by packers and distributors, at a meeting of industry representatives held in Chicago following the very successful 1950 frozen food industry convention.

In addition to Mr. Watson, chairman, the 1951 Convention Committee will include Alvin Langfield, president of the National Wholesale Frozen Food Distributors, Watson Rogers, president, National Food Brokers Association; Julius Gagini, president, National Association of Refrigerated Warehouses, and Fred Deutsch, of the Marathon Corporation, representing suppliers.

It is understood that policy decisions relating to the convention will be largely left to packer and distributor members of the committee, with other representatives serving principally in an advisory capacity.

Survey to Study Concentrate Juices

THE fast-growing frozen citrus juice concentrate industry will reap major benefits from a new research project to be undertaken jointly by the U. S. Department of Agriculture and the citrus and dried fruit industries. The project will study buying practices of household consumers in the purchase of fruits and frozen concentrates throughout the country.

The purpose of the survey is to furnish producers, processors, shippers and distributors of the products with information on purchases at retail by a national sample of several hundred thousand household consumers. Since the frozen juice concentrate industry is relatively new much information is lacking as to consumer preferences, size of typical purchase, and other characteristics of the users of the product.

The new study is to be conducted on a 12-month basis by the Industrial Surveys Co. Inc. of Chicago. Cost will be borne jointly by the government under the Research and Marketing Act, and by the citrus and dried fruit industries. Data to be studied will reveal total volume of each fruit or juice moving into the hands of householders on a current basis. It will also show types of stores where purchases are made, prices paid by consumers, and consumer buying in relation to size of family, size of household and age of household members.

Latest government estimates are that 22 million gallons of frozen orange juice concentrate alone will be processed this current season.

Frozen Milk Concentrate May Be New Product

FROZEN milk concentrate may be available to retail customers in two years, John M. Fox, president of the Minute Maid corporation, New York, said recently. He explained many companies, encouraged by the boom in frozen orange juice, are working on methods of putting milk concentrate in the familiar six ounce cans. The concentrate will be cheaper than fluid milk, he said.

Mr. Fox said milk concentrate is the industry's "most exciting" potential product because of the possibilities of cost reduction in dairy commodities. One of the economies, he explained, would be in handling milk at the time of surplus production.

Similar in some respects to that used in orange juice, the milk concentration process involves taking the water out at low temperatures in a high vacuum, he said.

"It does present some serious technical problems," he continued. "The proteins in milk are a new element to work with. So far no one has solved the complete stabilization of the end product so that it will keep well in storage."

Frozen Concentrate Plant Opens

A NEW modern frozen juice concentrate plant has been opened by the Polk Packing Association at Winter Haven, Fla. The preliminary freezing is done in cold wall tanks and votator and finished in a frozen tunnel of the company's own design. The refrigeration equipment was furnished by the Frick Co. of Waynesboro, Pa., and consists of three 8x8 compressors, one 7x7 compressor and one booster, 11½x8. The cold storage capacity is approximately 60,000 cases or twenty cars. The pack is for immediate shipment to a nationally known distributor. The evaporator equipment was furnished by the Buflo-vak Equipment Division of Blaw-Knox Co., Buffalo, N. Y. and has a capacity of 410 gallons of finished product per hour.

"BUTCHER BOY" is the preferred cold storage door of the industry, because it has ALWAYS met every conceivable challenge of hard usage. The strong, massive construction of Butcher Boy doors is the result of "controlled quality" production — a guarantee that they will meet every rigid test of required performance.

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Chicago Section, A. S. R. E.

THE Chicago Section of the American Society of Refrigerating Engineers at a meeting held Thursday evening, January 12 at the Builders' Club, Chicago, presented a panel discussion on the subject of education for the refrigerating engineer. This subject was discussed from three different viewpoints by the following speakers (1) Burgess H. Jennings, Northwestern University; (2) James H. Carpenter, Carrier Corporation; (3) N. J. Probenson, Air Comfort Corporation.

Mr. Jennings told of what the universities were doing in providing a broad base of engineering background for the student, without attempting to specialize in any one branch of industry. Thus a graduate engineer is qualified to pursue further study in his chosen field whether it be research, teaching, administration or production.

Mr. Carpenter explained the system of education offered by Carrier Corporation, one characteristic of industry in general. After a carefully screening mechanical engineering graduates by tests and interviews, this company conducts an intensified training course, probably the equivalent of several semesters of college work, and finds that this training shortens by two years the time required for the new employee to reach a given degree of effectiveness.

Mr. Prebensen reviewed the various activities of A.S.R.E. devoted to extending the education of refrigerating engineers. He cited the various bulletins and data of an informative nature which are published by the society and pointed out that any question, be it simple or extremely complicated, receives an answer written by an expert in his field.

The open discussion which followed was extremely spirited, resulting in the Chicago Section taking action by the forming of a policy committee to consider ways and means of accomplishing the following objectives: (a) Encourage student memberships, (b) Conduct a seminar regularly before each meeting, and (c) Actively "point" the programs of several meetings each year toward the interests of the younger members.

Association Objects to Direct Ammonia Refrigeration

THE Canadian Refrigeration Manufacturers' Association Niagara Falls, Ont., has condemned the Ontario Department of Labor in permitting the installation of direct ammonia refrigeration systems in hockey, skating and curling rinks, Garnet McCandless, secretary, announced. Permission was in direct contravention of the mechanical refrigeration code, which was adopted by the province under the Steam Boiler Act by Order-in-Council in 1939.

The condemnation, expressed in a motion was passed at the third annual convention of the association in Niagara Falls. Mr. McCandless said that ammonia passes through the pipes of such a system and that a serious leak could cause a major panic in public assemblies in skating rinks.

Philadelphia Section, A.S.R.E.

THE Philadelphia Section, American Society of Refrigerating Engineers had a large turnout Friday evening February 3 at the Engineers Club to hear a panel discussion of air conditioning. There were two speakers —J. B. Kavanagh who talked about activated carbon, and George F. Landgraf who spoke on electrostatic air filters. A lively discussion followed.

Book Review

PATENT PRACTICE MANAGEMENT, For Inventors and Executives. By Robert Calvert. Published by Scarsdale Press, Scarsdale, N. Y. 371 pages. Illustrated. Heavy cloth binding. Price $5.00. For sale by Nickerson & Collins Co., Chicago 44, Ill.

This book deals particularly with the patent problems of the research executive and engineer and presents the whole subject from their viewpoint and in their language. It presents not only the essentials of patent law, but also unusual and practical features that will be of value to anyone interested in the general subject. The author has devoted some ten years to industrial research, during which time he learned the problems and aspirations of technical workers and executives and is himself an inventor named in 15 United States patents. How to obtain patents, how to use them, and how to administer the patent policy in such manner as to stimulate research and invention are the primary subjects covered. As such it constitutes a contribution to research workers, engineers and the engineering industry.

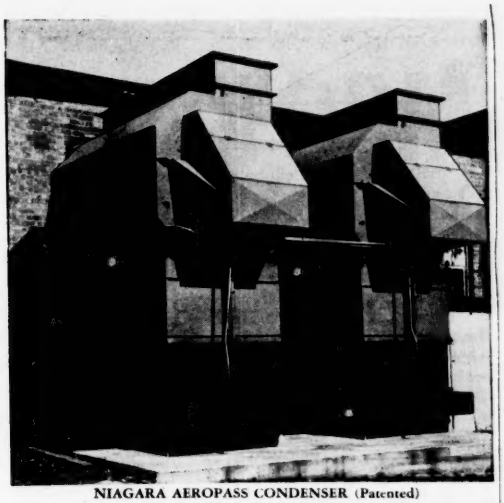
Summer Course in Food Technology

THE Massachusetts Institute of Technology, Cambridge, Mass., announces a special three-weeks' summer program in food technology at the Institute from June 12 to June 30, 1950. This course is intended principally for those having knowledge of the pertinent basic sciences who wish to broaden their perspective, or to increase their technical abilities in food fields.

The course will include economics and statistics of food supplies; equipment used in food processes; food bacteriology, sanitation and fermentation; chemistry and nutrition; food packaging, labor relations, and unit processes in food engineering. Detailed studies of food processing will be included covering various fields including freezing, meat packing, refrigeration and juice concentrates. In addition to lectures, demonstrations, conferences and reports relating to the subject matter, there will be opportunities for group visits to representative food industries in metropolitan Boston. The course will be under the direction of William L. Campbell, head of the Department of Food Technology. Full information regarding the course will be furnished by the Institute.

Panama Canal Announces Opening for Refrigeration Engineer

THE office of The Panama Canal advises that there is a vacancy in the position of mechanical engineer, refrigeration, for duty in the Panama Canal service on the Isthmus of Panama. This position is in Grade GS-12 at a salary of $8,000 per annum, for a minimum temporary employment of 18 months, on a 40-hour week basis. Free transporation to the Canal Zone is provided the appointee and his immediate family, as well as for his household goods and personal effects. Applicants must be graduates of colleges or universities of recognized standing and shall have had at least 10 years experience in the design of cold storage plants, three years of which shall have been in active supervision of and directly responsible for the design of large cold storage projects. They must also be American citizens in good physical condition, and not over 45 years of age, this requirement being waived up to 62 years for persons entitled to veterans' preference. Those interested are urged to communicate with the "Chief of Office, The Panama Canal, Washington 25, D. C." for further details and application blanks.



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The "Balanced-Wet-Bulb" control gives automatic operation at the minimum head pressure, saving power cost the year 'round!

In addition, the Niagara Aeropass Condenser saves nearly all your cost of cooling water, quickly bringing back to you the cost of installation. In plants where refrigeration is a production process, owners know that this condenser has reduced their costs.

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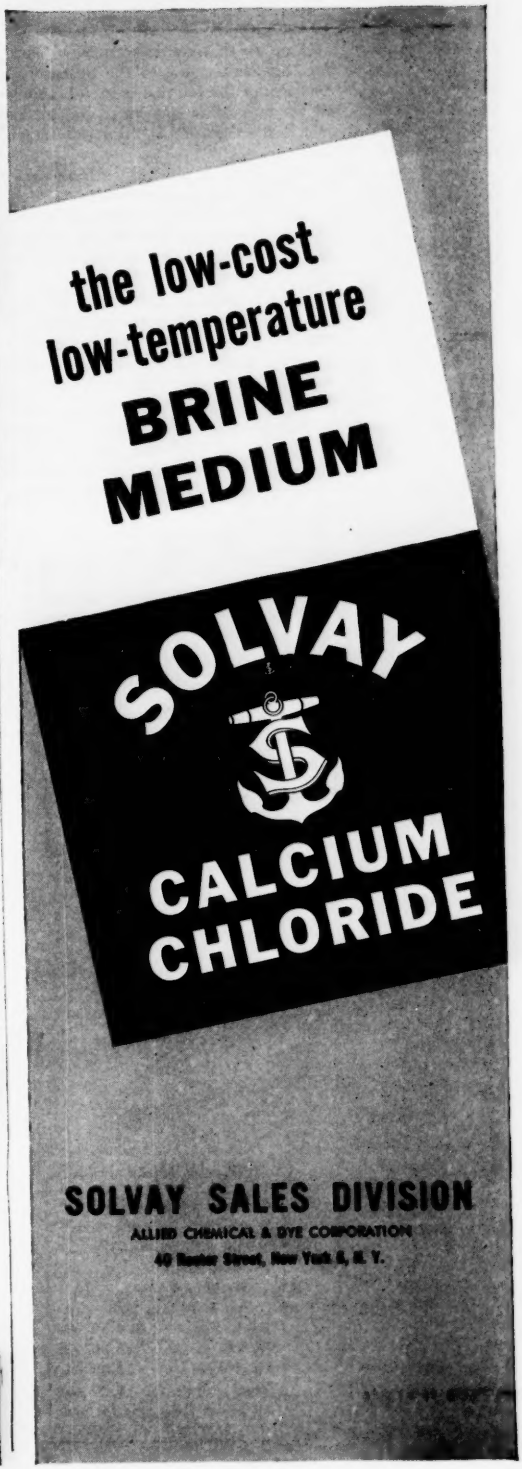

New York Ice Harvest Short

THE annual harvest of ice in Northeastern New York State may be lost this winter due to the unseasonal mild temperatures. Generally the harvest is in full swing by mid-February but to date there has been no cutting of ice from Black river, Lake Ontario, St. Lawrence river and its adjoining bays.

Veterans engaged in the annual harvest of ice from various north country points said that there is nothing which can be cut at this time and unless colder weather moves in for extended periods, the possibilities are that purchases of ice for the summer will have to be made from manufacturers.

While this section faces a dearth of natural ice, cutting operations have begun at Cornwall, Ont., in the Cornwall canal where the thickness is from ten to ten and a half inches. Lack of snow has made the cakes clear right through there with no slush on top to cut down quality.

The New York Central railroad is still waiting with hopes that ice may be harvested from its two usual north country points, in Black river at Carthage, and at Lake Placid. Ice taken at these communities by railroad cutters is used by the Central's St. Lawrence, Adirondack & Ottawa divisions.

H. G. Farnham, division superintendent, said there has been no ice cutting yet "because there is no ice there." Last year, ice was in the process of harvest at this time.

From Cape Vincent came the report that no cutting is possible due to a lack of ice. The harvest at the Cape in Lake Ontario at the headwaters of the St. Lawrence river was underway at mid-February last year.

The dim prospect for ice harvesting from north country points is reflected by a report from one Watertown ice manufacturing company that inquiries for ice purchases have been received from Massena and Thousand Island Park.

Low Temperature Research Laboratory

A NEW laboratory equipped for experiments at temperatures within one degree of absolute zero has been installed at Columbia University, New York. Columbia physicists will use the low-temperature facilities for the study at absolute zero temperatures (459.6 degrees below zero on the Farenheit scale) of electrical and magnetic properties of metals, and properties of liquid helium. According to Dr. Henry A. Boorse, executive officer of the Barnard College physics department and director of the laboratory, the experiments will also aid in the university's neclear physics program.

The laboratory, partly supported by grants from the Research Corporation, 405 Lexington Ave., and the Office of Naval Research, is on the ground floor of Pupin Hall on the campus of Columbia University. It is equipped to produce low temperatures by liquefying helium with the aid of a machine known as the Collins helium cryostat.

Cold Storage Retires Preferred Stock

THE California Cold Storage Distributing Co. San Francisco, Calif., called for retirement of all its prior preferred 5 per cent stock amounting to $200,000, on February 11. A regular dividend of 37½ cents per share on both the participating preferred and common stocks was declared, payable February 20 to stock of record February 11.

Dimensions: Height: 31"
Width: 9¼" - Depth: 5¼"
Height with Stand: 66"
Shipping weight:
Machine: 24 lbs.
Stand: 24 lbs.

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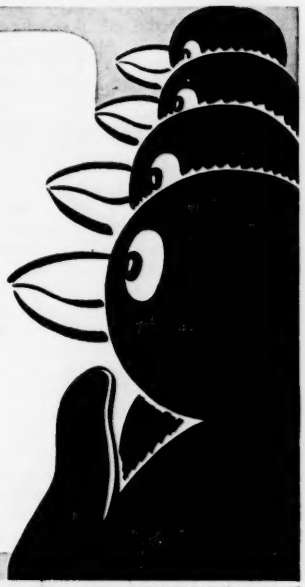

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PRINCIPLES of REFRIGERATION

The Book for:

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- SALES ENGINEERS
- CONTRACTORS
- ARCHITECTS
- STUDENTS
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PRINCIPLES OF REFRIGERATION, 3rd Edition (1947) revised by Wm. H. Motz, provides information and data for the practicing refrigeration engineer. Of special interest to erecting and operating refrigerating engineers, refrigeration machinery sales engineers, persons employed in building refrigerating machinery and those employed in ice making, cold storage plants or other establishments equipped with refrigerating machinery. Contains information that the refrigerating engineer should know in order that he may have complete and up-to-date knowledge.

Written in every day language and as free as possible from higher mathematics. The theoretical and fundamental operating principles are given attention first—followed by numerous practical considerations and the application of principles to the economic production of ice and refrigeration for various purposes.

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LOW PRICE: Complete with motors, switches and galvanizing. F.O.B. Mineral Wells, Texas **$1,295**

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Write Today for More Information

BATEMAN FOUNDRY & MACHINE CO., INC.
MINERAL WELLS, TEXAS

Institute of American Poultry Industries

(Continued from page 38)

Consumer Preference for Eggs

W. J. Stadelman, Washington Experiment Station, Pullman, brought out some interesting facts on the subject of consumer preference for eggs. He reported the results of 16,000 postcard questionnaires placed in egg cartons just before delivery to retailers. Important highlights of the survey included (1) More people are interested in yolk color than in shell color; (2) Contrary to popular opinion, there was a greater preference for brown shells in Western Washington, and a preference for yolks darker than those produced by many commercial flocks in Washington, and darker than the light yellow specified in Grade AA standards; (3) Consumers are more interested in quality than price. More favorable comments on quality were received than total comments on price. But quality factors such as poor shells, blood spots, lack of refrigeration in stores, bad or strong odors or tastes, rotten or spoiled eggs, and lack of uniformity in size were mentioned frequently. (4) Housewives do a good job of caring for the eggs they buy by buying weekly and keeping eggs under refrigeration; (5) Concurrent checks on egg quality prior to delivery to retailers clearly indicated that egg turn-over in retail stores is much too slow—old supplies are not cleaned up before fresh supplies are sold; (6) Almost every store visited had refrigeration—but only a little better than half of them kept eggs under refrigeration.

Egg Procurement Methods

Costly, inefficient procurement is one of the biggest problems facing poultry and egg processors in farm areas. A summary of the Department of Agriculture's study of egg procurement methods, made in 1948 and just now summarized developed the following points: (1) Only 66 per cent of the eggs delivered by producers in the thirteen states studied were Grade A at the time of delivery; (2) Producer quality varied widely. In one case where producers delivered lots of the same size on the same day to the same station at the same price, quality varied from one lot with no grade A's to one containing 90 per cent A's; (3) No area is a low quality area. If some producers in all areas can deliver high quality the rest can, generally, do the same by following similar practices; (4) Grade buying resulted in delivering better quality but no data were obtained to show whether the added returns offset the added cost; (5) Producers with larger flocks delivered higher quality eggs; (6) The number of times eggs are picked up and set down seemed to be a more important shell damage factor than the distance they travelled or the type of case used.

Food Technologists Honor Rector

THE Institute of Food Technologists has awarded Thomas M. Rector, vice president of General Foods Corp., New York City, the Nicholas Appert medal for 1950. The announcement was made by Charles L. Smith, chairman of the Nicholas Appert award jury of the Chicago Section of the Institute of Food Technologists. Mr. Rector is also chairman of the Panel on Food, Committee on Equipment and Materials, Research and Development Board, Washington, D. C. He will be awarded the medal at the Decennial Conference of the Institute at the annual banquet on the evening of May 23, 1950, at the Edgewater Beath Hotel in Chicago.

OBITUARY

George A. Westerlin

THE death of George A. Westerlin, honorary president of Westerlin & Campbell Co. refrigeration and air conditioning contractors, Chicago, Ill., occurred January 22 after a two-year illness at the age of 67. He was a son of the late John M. Westerlin, a pioneer in the refrigerating field and founder of the company bearing his name.

Mr. Westerlin was educated in the public schools and North Park College, Chicago, and in 1899 accepted a position with the Westerlin & Campbell Co. He served in various capacities, as treasurer, secretary, vice-president and, upon his father's death, became president. At the end of 1947, because of ill health, he resigned as president and served as honorary president.

He was a member of the American Society of Refrigerating Engineers and of the Swedish Club of Chicago. Funeral services were held January 26 in Trinity Lutheran Church, of which he had been a member for many years.

J. Clemons Sexton

THE death of J. Clemons Sexton, founder and one of the owners of the Crystal Ice Co., Clarksdale, Miss., occurred Sunday night, February 5, at Clarksdale Hospital. He was 63 years old.

Mr. Sexton had lived in Mississippi since 1914, going there from Union Hill near Kankakee, Ill. He formerly owned an electrical business in Indianola and after selling this business moved to Clarksdale in 1925 and organized the Crystal Ice Co. with his brother J. M. Sexton as a partner. Later his son, Richard, was taken into the firm.

He was a member of the Coahoma County Chamber of Commerce and a former president of the Delta States Ice Association, of which he was a director at the time of his death. He was a member of the Methodist Church, the Delta Council, the National Association of Manufacturers, a Mason, Shriner, Elk and an honorary member of the Sons of the Confederacy.

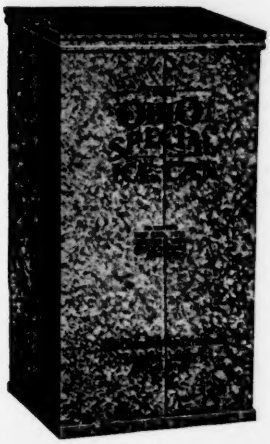
He leaves his widow Mrs. Eleta Hydrick Sexton and his son Richard.

ARTHUR B. COLE, Eastern representative of the Savage Arms Refrigeration Co. of Ithaca, N. Y., died January 28 in a hospital at New Rochelle, N. Y., after a long illness at the age of 57. His residence was in New Rochelle. Born in New York, Mr. Cole had been in the refrigerating and frozen food business most of his life, pioneering in many types of frozen foods and their equipment. He served during World War II as an agricultural marketing administrator for the U. S. Department of Agriculture.

NAPOLEON SENECAL, one of the oldest and best known ice merchants in Montreal, Canada, passed away quite suddenly in December. His experience in the ice business goes back to the beginning of the century, and he at one time owned extensive ice properties.

RICHARD J. JUMPER, secretary and director of the Lincoln Ice Co., Chicago, Ill., died Saturday, January 21 after a short illness. He was 70 years old. He is survived by two daughters.

OHIO SPECIAL ICE CANS



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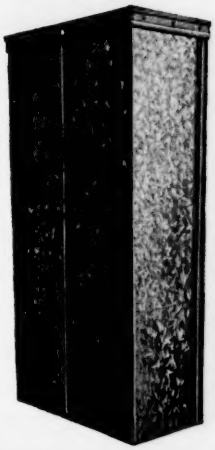

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NILES — *Established 1902* — OHIO

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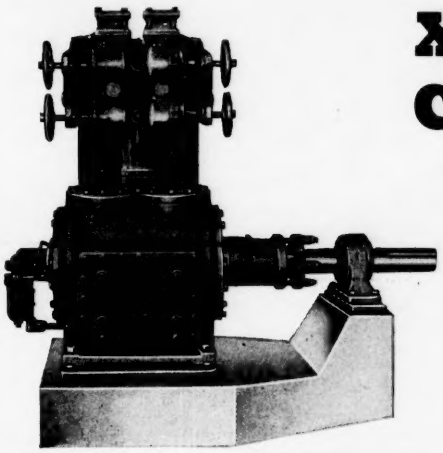

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HAVE LONG LIFE and DEPENDABILITY

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HILGER CHIP ICE MANUFACTURING UNITS

Now available in capacities to make 100 to 3000 pounds of ice per HOUR. For FISH—POULTRY—SAUSAGE and VEGETABLE PROCESSING PLANTS.

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COMING CONVENTIONS

MICHIGAN ICE INDUSTRIES ASSOCIATION
March 2-3, 1950
Hotel Morton, Grand Rapids, Mich.
EDWARD W. JACKSON, Secretary

NORTH CAROLINA ICE ASSOCIATION
March 6-7, 1950
Sir Walter Hotel, Raleigh, N. C.
LEWIS H. POWELL, Secy.-Treas.

INDIANA ASSOCIATION OF ICE INDUSTRIES
March 6-8, 1950
Lincoln Hotel, Indianapolis, Ind.
ROBT. W. WALTON, Secretary

KANSAS ASSOCIATION OF ICE INDUSTRIES
March 27-28, 1950
Allis Hotel, Wichita, Kans.
C. A. BERKIHISER, Secretary

EASTERN STATES ICE ASSOCIATION
April 12-14, 1950
Haddon Hall Hotel, Atlantic City, N. J.
SAMUEL FREER, Secretary

MOUNTAIN STATES ASSOCIATION OF ICE INDUSTRIES
April 27-28, 1950
Plains Hotel, Cheyenne, Wyo.
J. REIMER ESPY, Secretary

Sales and Reorganizations

Fort Huachuca, Ariz.—Wm. Waggoner and Fred Itule, prominent Santa Cruz County residents have purchased ice and cold storage plant facilities here. The facilities can handle up to 30,000 lbs. of frozen foods each day. Mostly shrimp from the Gulf of California has been processed at the plant. Seafoods are airlifted from Mexico.

Dover, Del.—The Service Ice & Storage Co., operated by the Behen family since before the turn of the present century, was recently sold to the Diamond Ice & Coal Co. of Wilmington, Del.

Greenfield, Ind.—Walter H. Weil of this city became the owner of the Greenfield Ice & Fuel Co. recently. The amount of the consideration was understood to be approximately $13,000. The purchase of the long-established local firm was made by Mr. Weil from stockholders of the company, three of whom are widows of the former owners, Mrs. Harvey J. Rhue, Mrs. Chas. H. Cook and Mrs. James O. Davis and heirs of the John R. Moore estate. Mr. Weil expects to continue the operation of the business. Ward Rhue will continue in the capacity as manager of the business.

Lebanon, Tenn.—Neal Scheurman, owner of the Perfection Ice and Ice Cream Manufacturing Co., has purchased the Inter-State Ice and Coal Co. The Inter-State company has been operated in Lebanon for about 40 years by A. B. Humphreys, Sr. It is one of the few steam-operated plants still in existence.

Stephenville, Tex.—Harry Park, owner of the Stephenville Ice Co. here, has announced the purchase of four ice plants and two refrigerating stations in this area. The ice plants purchased are located at Hamilton, Comanche, Rising Star and De Leon. The refrigerating stations are located at Gorman and Cross Plains. Consideration was in excess of $100,000 according to Mr. Park.

Indians Build Freezing Plant

INDIANS in Nelson House, Manitoba, Canada are taking another page out of the white man's book—they're setting up a freezing plant so they'll have plenty of food in the summer. All 500 members of the community are engaged in making ice for a cold storage locker house in which each Indian will have space. In addition, preparations also are under way for facilities to smoke whitefish.

ASSOCIATION DIRECTORY

AMERICAN INSTITUTE OF REFRIGERATION
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NATIONAL ASSOCIATION OF ICE INDUSTRIES
Mount Taylor, Secretary, 1706 L St., N. W., Washington 6, D. C.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
Wm. Dalton, Exec. Vice-Pres., Tower Bldg., Washington 5, D. C.

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Robert W. Walton, Secretary, Board of Trade Bldg., Indianapolis, Ind.

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C. A. Berkihiser, Manhattan Ice & Cold Stg. Co., Manhattan, Kans.

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MICHIGAN ICE INDUSTRIES ASSOCIATION
Edward W. Jackson, Secretary, 131 E. Kalamazoo Ave., Kalamazoo, Mich.

MISSOURI ICE MANUFACTURERS' ASSOCIATION
A. V. Esphorst, Secretary, 3820 Washington St., St. Louis, Mo.

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NEBRASKA ASSOCIATION OF ICE INDUSTRIES
Frank Vogelsang, Secretary, W. T. Good Ice Co., Lincoln, Nebr.

NEW ENGLAND ICE ASSOCIATION
Raymond Wilber, Secretary, 419 Boyleston St., Boston, Mass.

NEW YORK STATE ASSOCIATION OF REFRIGERATED WAREHOUSES
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Ed. H. Shea, Secretary, 2027 N.E. Schuyler, Portland, Oreg.

OHIO ASSOCIATION OF ICE INDUSTRIES
Guy W. Jacobs, Secretary, The Steubenville Ice Co., Steubenville, Ohio

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WEST VIRGINIA ASSOCIATION OF ICE INDUSTRIES
E. Dana Smith, Secy., Diamond Ice & Coal Co., Charleston, W. Va.

WISCONSIN ASSOCIATION OF ICE INDUSTRIES
Paul F. Hoff, Secretary, 1300 East Locust St., Milwaukee, Wis.

Dry Ice Journal Resumes Publication

AFTER a lapse of several years, publication of "The Dry Ice Journal" *(Das Trockeneis)* has been resumed in Fuessen-Bavaria, Postfach, Germany (U. S. Sector) by Dr. R. Bauer, prominent German scientist. It will be published in English and German. Later it is planned to issue a French edition under the title *"La Revue de la Carbo-Glace."* Dr. Bauer was employed in the U. S. Air Force as a scientific consultant on the use of Dry Ice. The subscription price is $6.00 for the German and $8.00 for the English edition.

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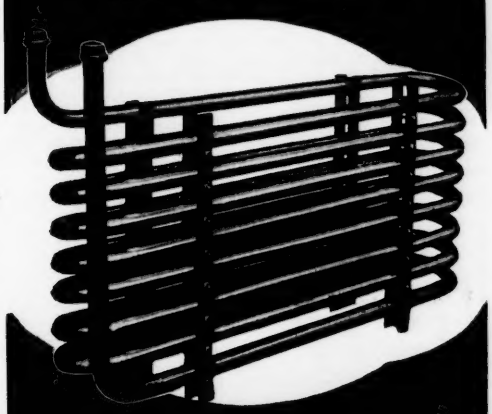
Smooth Bends
Perfect Welds
Exact Measurements



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Venders Cut Delivery Costs..Sustain Winter Ice Volume In Eastern & Midwestern Cities

Last year in Minneapolis, Chicago and St. Louis winter experiments showed that greater volume was obtained by keeping normal off season truck deliveries and letting Sturdy-Built Stations capture the plus market. By letting Sturdy-Built Stations carry the off season load, profits were substantially increased.

S & S equipped stations sell ice 24 hours a day, serving occasional customers who account for 27% of all ice sold through Sturdy-Built Stations as well as the *"after hour"* customers. (45% of all ice sold from Sturdy-Built Stations is purchased between 4:00 P.M. and 8:00 P.M.).

You can depend on Sturdy-Built to increase volume, lower distribution costs and stretch profits. The dependability of S & S Ice Vending Machines and Sturdy-Built Stations for 18 years remains unequaled and unchallenged.

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IN THE EAST
F. B. DICKINSON CO.
Highland Park Station
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REFRIGERATED STURDY-BUILT ICE VENDING STATIONS

NEW PLANTS AND IMPROVEMENTS

Information pertaining to proposed new plants utilizing refrigerating equipment, as well as additions, improvements, and rehabilitation of existing plants. News regarding such new plants and additions is invited for publication in this department.

CALIFORNIA

San Jose, Calif.—Barron-Gray Packing Co., Fifth and Martha Sts., subsidiary of Hawaiian Pineapple Co., will construct a modern warehouse, to cost an estimated $250,000. The new warehouse will replace the one destroyed by fire last October at a loss of $275,000.

San Jose, Calif.—A $55,000 addition to Modern Ice & Cold Storage plant, 1010 N. 13th St., is being constructed by E. A. Hathaway. It is a single story frame structure including a storage and freezing tunnel unit comprising 100,000 cu. ft.

Santa Barbara, Calif.—Robert T. Andersen, head of Andersen's Valley Foods, Inc., of Buellton, announces the closing of the frozen split pea soup plant in San Louis Obispo and the opening of a new plant here. Sales of the product have shown a steady growth every year, Andersen said. It is now sold in most markets in California; in Portland and Seattle, Wash., Hawaii and Guam.

CANADA

Toronto, Ont., Canada—To more adequately take care of its expanding business, Lake Simcoe Ice & Fuel Limited, has now under construction a new plant with a daily ice-making capacity of 78 tons, situated in the growing Leaside district. The plant is expected to be in operation by June 1. This company has just entered into a long-term contract to supply the Canadian National Railroad with coach-yard and team-track icing in the Toronto area, largely served in the past with natural ice brought in from outside points.

INDIANA

Indianapolis, Ind.—Irvington Ice & Coal Co. has installed a new Model 20-B Sturdy-Built ice vending station.

MEXICO

Guaymas, Sonora, Mexico—The new Guaymas freezing plant is now completed. As reported in the November, 1949, issue ICE AND REFRIGERATION, this freezing plant will serve to hold stocks for vessels destined for Europe. First shipment of frozen Mexican beef has been consigned to Greece. Cattlemen from all sections of Sonora attended the dedication rites of the new plant. W. C. Greene of Cananea heads the freezing plant company.

MISSOURI

Ste. Genevieve, Mo.—Vincent Sexauer announced recently that he and his brother, Raymond, will build a 15 ton ice plant here. The ice plant will be modern and in the latest style. The building will be located on Highway 25, just South of Huck's Hickory Home. The plant will feature coin operated machines for self-service.

NEVADA

Reno, Nev.—The Sierra Meat & Provision Co., Second and Locust Sts., recently completed their new plant. Frank Humphrey, well known Reno stockman, is president of the company and Virgil Wedge, Reno city attorney, is vice president and Herb Meusell is general manager and secretary-treasurer. The modern building has cooling, and freezing rooms.

NEW YORK

New York, N. Y.—Another Sturdy-Built ice vending station is being set in operation by American Ice Co., to start off the 1950 season. It is a Model 16-C (S & S equipped) supplied by F. B. Dickinson & Co. of Des Moines, Iowa.

Rochester, N. Y.—The New York Central System during the coming year will spend more than a million dollars in improvements on the Rochester stretch. A major development in the program will be the construction of a 40-car icing plant at Wayneport. This facility, it was reported, will allow the Central to dispense with icing of cars at Gardenville, East Buffalo and Suspension Bridge, and again at Selkirk, south of Albany.

OHIO

Dayton, Ohio—Terminal Cold Storage & Ice Co. has put another Sturdy-Built Model 20-C ice vending station in operation. Equipped by S & S, the unit was supplied by the Des Moines, Iowa, plant of F. B. Dickinson & Co. The station dispenses 25 and 50 lb. blocks, as well as prepared packaged ice.

TEXAS

El Paso, Tex.—Pacific Fruit Express Co. plans an addition to the ice loading dock in the Southern Pacific Yards here. The addition is to cost approximately $115,771. The new dock will service 200 refrigerator cars.

VIRGINIA

Salem, Va.—Valleydale Packers, Inc., here will construct an addition to the present plant to cost several hundred thousand dollars, Lorenz Neuhoff, Jr., president announced recently. The new addition which will contain two stories and a basement, will double the refrigerating area of the plant, Mr. Neuhoff said. Valleydale Packers, Inc. has four plants owned by the company that was organized by Mr. Neuhoff in 1932 at Lynchburg. Other plants are at Bristol, Clarksville and Union City, Tenn. A $500,000 addition is now being made to the Bristol plant.

Icy Items

San Jose, Calif.—The State Public Utilities Commission authorized the Modern Ice & Cold Storage Co. to issue a $250,000 note and execute a deed of trust and chattel mortgage.

Thibodaux, La.—Gulf Ice, Inc., filed notice of dissolution of incorporation with the Office of the Secretary of State at Baton Rouge recently.

Beaumont, Tex.—The Secretary of State has permitted the Texas Ice Co. here to exchange 1,650 shares at $100 each for 6,600 shares at $25.00 each.

Coolidge, Tex.—Coolidge Ice and Frozen Foods, Inc., has been granted dissolution of incorporation.

Dallas, Tex.—Union Ice Co. Inc., has recently been granted dissolution of incorporation.

Fires and Accidents

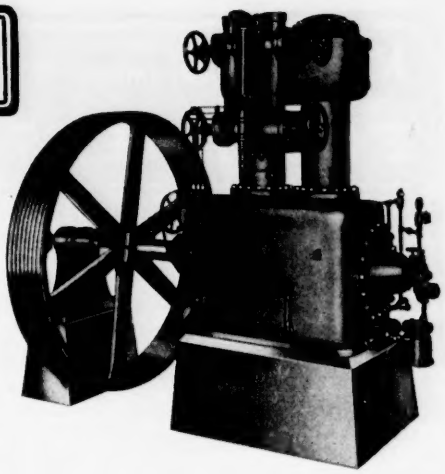
Little Rock, Ark.—The Standard Ice Co.'s plant at 114 S. Main St. was damaged by fire recently. Loss had not been determined.

Renova, Pa.—The Renova Ice Co.'s ice house was destroyed by fire recently with an estimated loss of $100,000. Fire officials estimated the building was worth $20,000 and damage to the equipment was $80,000.

New Incorporation

Greenville, Tex.—The Secretary of State at Austin has approved the incorporation of the New Ice Company here with $100,000 capital stock by G. L. Burnett, L. L. Bowman Jr., and Naud Burnett.

Sterling DEPENDABLE REFRIGERATION



The phrase "STERLING DEPENDABLE REFRIGERATION" is more than a slogan—it's a fact.

Built with rugged strength for endurance, with advanced design for efficiency and economy of operation, STERLING Ammonia Compressors are the product of more than fifty years of "know how" in the manufacturing of refrigeration machinery and equipment.

A complete range of sizes insures the correct compressor for each application.

Deliveries are, at present, current—most models of compressors are available from stock.

For complete information, see your nearest STERLING distributor, or write the factory.

REYNOLDS MANUFACTURING CO.

SPRINGFIELD *"Builders of Fine Refrigeration Equipment"* **MISSOURI**

THREE-WAY BOOST *for the* ICE BUSINESS!

Most revolutionary gadget in the coin machine business. Easily attached to any iced beverage cooler; gives maximum vending protection at minimum cost.

Helps ice business three ways. (1) Holds old accounts. (2) Brings new accounts. (3) Profit on every PAY-PULL machine you sell.

- **GUARANTEED**
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$17.50

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Write for Details on QUANTITY DISCOUNTS

Don't delay! Write today for details on the amazing PAY-PULL Coin Controlled Cap Remover, with Special Dealership Offer for Ice Manufacturers and Suppliers.

PAY-PULL MANUFACTURING CO., Inc.

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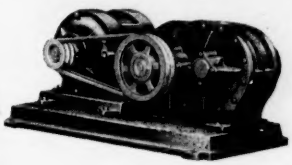

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Don't chance loss of profits this year due to lack of capacity or air supply failure. Install R-C Rotary Positive Blowers in your ice plant now and be sure that you're set for heat wave demands. With R-C Blowers you get positive air volume at the pressure you need, regardless of temperature or weather.

Ten years or more of faithful, continuous delivery at rated capacities isn't unusual with R-C Blowers. Simple design, sturdy construction and lack of small moving parts assure such long-time performance. For replacements or additions, write us your requirements or ask for Bulletin R-C 1247.

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ROOTS-CONNERSVILLE BLOWER Corp.

One of the Dresser Industries

ROOTS-CONNERSVILLE BLOWER BUILDERS SINCE 1854

ONE OF THE DRESSER INDUSTRIES

NEW AND IMPROVED EQUIPMENT

MACHINERY-APPLIANCES-PROCESSES

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

New Line of York High Speed Compressors

A NEW line of high speed refrigeration compressors for ammonia application has been developed by York Corporation for the 1950 market to handle from 15 to 275 h.p. equivalent of refrigeration with a much improved economy, according to John R. Hertzler, vice-president and general sales manager. Termed V/W compressors because of the arrangement of its cylinders, the new line, according to Mr. Hertzler, results in a greater freedom from vibration similar to airplane engine designs.

York high-speed direct drive compressor, eight cylinders.

The compressors are credited with having long life, because cylinder liners and all other parts subjected to wear can be removed for replacement with a minimum of effort and at very low cost. Most of the parts on the various size compressors are interchangeable, thus eliminating the necessity of keeping a large assortment of spare parts in inventory, where a number of compressors have been installed. Upper floor mounting without special foundations is made possible by static and dynamic balance of the compressors.

Because of the compact design, less floor space and head room is required. Quiet performance is made possible by precision-built ring plate type suction and discharge valves, spacious gas ports and gas passages. Starting power requirements are reduced by automatic unloading of cylinders with 'easy start' control. Efficient operation at all loads is achieved by capacity reducers that save power costs under varying local conditions. Then too, increased valve life is obtained by anchoring valves to prevent wear by rotation.

The ammonia V/W compressors are available for use with remote condensing equipment (either water cooled or evaporator cooled condensers) to meet every refrigeration need in the range of 15 to 275 hp inclusive. They are designed with four, six, eight, 12 and 16 cylinders and for direct connection to motor.

Portable Ice Chest

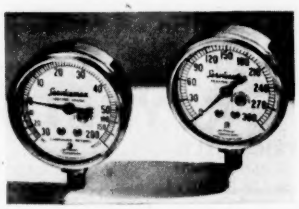
A NEW design of portable ice chest called Pik-nik Ice Box is being manufactured by the Hamilton Metal Products Co., Hamilton, Ohio. Of round design the body has thick fibreglass insulation to maintain low heat loss when used with either hot or cold commodities. Diameter is 11¾ in., height 14 in., capacity 4 gallons.

New Pic-nik Ice Box

One of the features is an inner chamber which is filled with ice to maintain low temperature and yet avoid direct contact of food and ice where this is desired. A vinyl coating protects the surfaces of the metal and also prevents transfer of odor or flavor to foods or liquids in contact with the surfaces of the chest. Finished in blue with yellow cover the chest is light in weight. The cover is single thickness metal-compression type. Sales office is at 855 Avenue of Americas, New York 1.

New Marsh Refrigeration Testing Gauge Set

A NEW refrigeration testing gauge set has been announced by Marsh Instrument Co., sales affiliate of Jas. P. Marsh Corp., Skokie, Ill. The set, consisting of a compound retard gauge and a pressure gauge for use with manifolds and other testing, has been developed in the words of the manufacturer "to provide the serviceman with testing gauges which represent the ultimate in quality, accuracy and utility."



New refrigeration testing gauge set announced by Marsh Instrument Co.

Both gauges have Marsh heavy-duty bronze bushed movements and are calibrated to the extreme accuracy of plus or minus 1 per cent of reading over their entire ranges. Knife edge pointers are provided to facilitate close reading. Both gauges have the Marsh "Recalibrator" which enables the user to restore the accuracy of a gauge that has been knocked out of adjustment by simply turning a "Recalibrator screw" on the face of the gauge. Attention is called to the fact that the "Recalibrator" re-establishes the relation of the bourdon tube to the movement, thus correcting the gauge throughout its entire range. Naturally, this is particularly important in a testing gauge. A screwed, knurled ring is provided on each gauge to give quick, easy access to the "Recalibrator" screw.

Both gauges are in 2½-inch polished brass cases with bevelled glass crystals, giving them a handsome, business-like appearance. The manufacturer stresses the value of the retard scale of the compound gauge which provides easily-read, one-pound graduations through the important testing range of 0-50 lbs. A new bulletin describing the testing set is available from the manufacturer.

New Vending Device For Soft Drinks

NO ONE knows better than ice manufacturers what percentage of their gross production tonnage goes into iced beverage coolers . It is sufficient to say that this is a huge market, offering possibilities for greatly increased sales of ice and its importance cannot and should not be overlooked.

Any threat to the existence of iced beverage coolers is a threat to the business volume of the ice companies that service them. Likewise, any equipment that will tend to keep iced beverage coolers in operation will be received by the ice industry as a business aid that helps to hold ice accounts and to stimulate the sale of ice.

Good news for the ice industry is the introduction of a revolutionary gadget called the Pay-Pull Coin Controlled Cap Remover which, simply and inexpensively, provides vending protection for any open style beverage cooler, many of which are refrigerated by means of ice. Easily attached to any soft drink box, after the original bottle opener has been removed, the Pay-Pull machine makes it necessary for the customer, after selecting his soft drink, to deposit a nickel in the machine in order to open his bottle.

Surveys show that, in soft drink outlets such as service stations, grocery stores, restaurants and others where beverages are dispensed from an open cooler, 99 percent of soft drink pilfering is due to forgetfulness, not dishonesty. This is the large percentage of loss to which the Pay-Pull machine is said to put an effective stop.

Lack of adequate vending protection is given as the main reason for the switch to electric bottle vending machines in so many locations, with the consequent elimination of such outlets as customers for manufactured ice. With the introduction of the ingenious Pay-Pull attachment, the beverage retailer is able to add the benefit of vending protection to his open drink box, at a minimum investment and no installation cost, with the result that an ice account is retained.

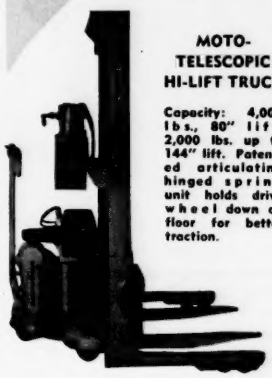
Developed at Southwest Research Institute and manufactured by the Pay-Pull Manufacturing Company, Inc., of San Antonio, Texas, the Pay-Pull attachment is patented and guaranteed. Since it retails for only $17.50, it frequently pays for itself, over and over, in a matter of a few weeks by the profit protection it affords. Special discounts are available, it is understood, to ice manufacturers and suppliers who are interested in offering the machine to their accounts on a resale basis.

MOTO-TRUCS Pay Off!

THEY GO MORE PLACES, operate in less aisle space

MORE COMPACT POWER UNIT

Makes them up to 15⁰⁰ SHORTER



MOTO-TELESCOPIC HI-LIFT TRUCK

Capacity: 4,000 lbs., 80" lift; 2,000 lbs. up to 144" lift. Patented articulating hinged spring unit holds drive wheel down on floor for better traction.

Moto-Truc Motorized Battery Operated Walkie Trucks are filling a long felt need in many refrigerated warehouses — because less handling space is needed and power cost is as little as 8c per 8-hr. day.

Besides being shorter, **Moto-Trucs are amazingly easy to operate.** A turn of the wrist on easy grip roller type handle gives two speeds forward and two speeds reverse. Push buttons in the ends of handle, control the hydraulic lift.

Moto-Truc dependability can't go wrong. Dead man controls and other safety features are real protection for both the operator and loads. Moto-Truc maintenance cost is comparatively nil. Power unit is quickly accessible for inspection and servicing. And the entire construction is designed for long service.

MOTO-PALLET TRUCK

Low battery mounting prevents tipping. Patented Nydegger shackles on load wheels insure smooth travel over uneven floors, elevator entrances, etc.

Write for Literature

PALLET TRUCKS • HI-LIFT TRUCKS • PLATFORM TRUCKS

The MOTO-TRUC Co.
1953 E. 59th Street
CLEVELAND 3, OHIO.
ORIGINATORS OF MOTORIZED HAND TRUCKS

New Thermobank For Ammonia

A COMPLETELY automatic hot gas defrost system for ammonia will be available to the refrigeration industry in the near future. This system was developed by the Kramer Trenton Company and will be marketed under the trade name of "Therfrom the conventional Thermobank mobank". The new system varies used for Freon. Since the characteristics and behavior of ammonia differ from Freon, the Kramer Laboratory was fully equipped with complete testing facilities for ammonia last fall. Extensive laboratory tests were made under various temperature conditions and applications, which included tests on installation where the Thermobank is one of two or more systems using a single compressor. At the present time there are under observation six pilot field installations covering various applications which include the use of Thermobank in conjunction with ammonia compressors handling a number of other systems.

The new Thermobank System will use a time clock and solenoid to control the hot gas defrost. To prevent the condensed hot gas leaving the evaporator from returning directly to the compressor, a re-evaporator is placed in the suction line. A re-evaporator is an air to refrigerant heat exchanger, which operates only during the defrost cycle.

There will be three sizes of evaporators having an approximate capacity at a 10 F temperature difference of 2 ton, 1½ ton and 1 ton. Multiple systems consisting of two or three evaporators can be used with a single compressor. In large installations, it is possible to have more than one system on a single compressor.

Whatever You Need in Refrigeration

Creamery Package

CP either makes or can provide you with leading makes of

Shell and Tube Condensers

•

Evaporator Condensers

•

Ammonia Fittings

•

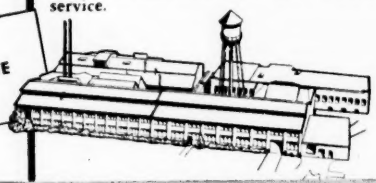
Ammonia Controls

•

CP offers you an extensive line of vertical two-cylinder Compressors, Self-contained Marine Units and Multi-cylinder Compressors and Boosters plus CP Engineering to cooperate in planning efficient economical refrigeration systems.

The modern CP factory (pictured below), which is devoted exclusively to the manufacture of refrigeration machinery, combines with a coast to coast network of 21 company owned and operated branches to give owners of CP Refrigeration Equipment the important advantage of one source of *complete* supply and service.

The Home of CREAMERY PACKAGE REFRIGERATION



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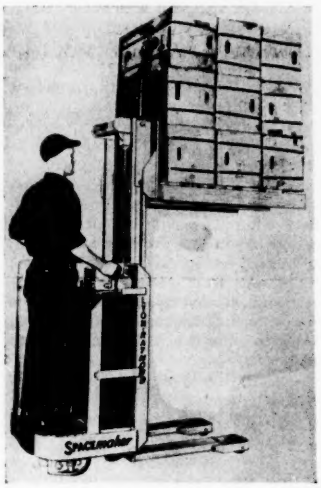
Avery House, Clerkenwell Green, London, England

Electric Tiering Truck

A NEW electric tiering truck is announced by the Lyon-Raymond Corp., Greene, N. Y. It has been designed for maximum maneuverability, to tier from narrower aisles and in areas that were not previously possible with conventional power tiering trucks. It will operate from a 6 ft. aisle. This, it is pointed out, will not only increase usable floor and air space by narrowing of aisles, but will make possible also the tiering of skid and pallet loads in areas where it has been considered impractical. Among these are upper floors in multi-story buildings where floor and elevator capacities were insufficient for the use of the conventional heavier power trucks. At present it is furnished in three different types: (1) platform type for tiering skids; (2) fork type for tiering single face pallets; (3) straddle type for tiering two faced pallets. Although it is just been introduced to the market, this new tiering truck has been subjected to extensive tests in large manufacturing plants and warehouses.



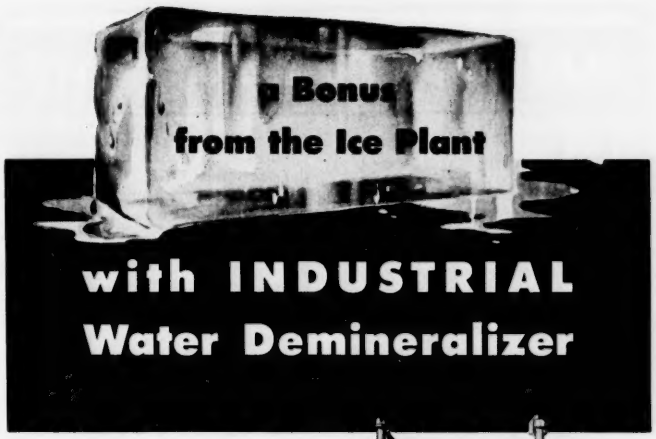
Side view of new "Spacemaker" electric power lift truck announced by Lyon-Raymond Corp.

New Ice Pick Vendor

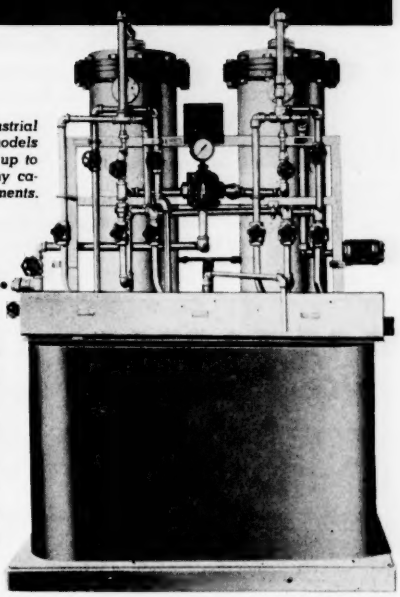
THE United Ice Supply Company of Boston is now ready to offer to the trade a guaranteed, precision made ice pick vendor, to be known as the Pickwell Vendor. After much research by their engineers the company announces that no other improvements can be made either in quality, workmanship, or price. The vendor is an attractive, colorful unit that holds 20 completely assembled ice picks, hammer aluminum finish, with chrome plated frame and mechanism. The electrically welded steel body is for all-weather operation. It has a 10 cent anti-slug mechanism, exclusive quick action, nonjamming, patented delivery. As a safety measure and a rust preventive medium, the company will equip the ice picks with a heavy Kraft tube covering the blades for vending.

Pickwell ice pick vendor, equipped with stand, made by The United Ice Supply Co.

The vendor comes either with or without a stand and can be attached to any wall space. It has a double locking door panel with a separate lock for the coin box, which holds $30.00 in dimes. The machine has been location tested and, without any advertising these vendors have sold an average of ten to twenty ice picks per day.



A typical two-bed Industrial Water Demineralizer. Standard models available with capacities up to 1000 gph. Special units of any capacity engineered to requirements.



Here's how it works...

Instead of running ordinary city water into the freezing tanks, it is passed through the Industrial demineralizer where beds of ion-exchange resins remove the dissolved mineral salts—delivering the chemical equivalent of pure water.

With this pure water there are no minerals to deposit in the core—so the whole core-pulling operation is eliminated. Furthermore, the amount of ice which cracks in the cans is appreciably reduced. And the transparency of the whole cake is improved—your customers will notice the difference and like it.

It's easy to find out how to get this big bonus from your ice plant. Send us an analysis of the water you are using, the quantity you need, and at what rate (gallons per hour). We will send you complete information on demineralized water, estimate of costs, performance data, etc. Better look into it right away.

FILTERS Pressure Type · PUMPS Centrifugal · CORROSION TESTING APPARATUS Salt Fog • Humidity

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RUBBER DIVISION
Vulcanized Linings • Molded Products

WATER DEMINERALIZERS

MANUFACTURERS' NEWS

Cabinet Exhibit Shown in California

A REPORT has been received from Henry S. Robinson, national sales manager of Ace Cabinet Corporation, New Bedford, Mass., that the Ace exhibit in the 30th annual convention

of the California Association of Ice Industries held recently at the Fairmont Hotel in San Francisco, was well received by California ice cream and frozen food companies.

Three new models were exhibited, the popular OGF one-piece full vision display cabinet; the WOD (Acemobile) frozen food display cabinet and the SG-20 sliding glass top with superstructure. The show was attended by prominent ice companies, frozen food and locker plant operators from California, Nevada, Arizona, Oregon and Washington. The photo shows the Ace booth with Gardner Forster, California regional sales manager, in charge.

Pure Carbonic Opens Dry Ice Warehouse

PURE Carbonic Company, a division of Air Reduction Company, Incorporated, has established "Dry-Ice" warehouse points at Knoxville and Nashville, Tenn.; Akron, Ohio; Elmira, N. Y., and Fresno, Calif., it was announced recently. Pure Carbonic now has over eighty distribution points throughout the United States.

MARTOCELLO ICE PICKS

"Cost You Less To Buy The Best"

Immediate Delivery on Plain Handle Ice Picks

BLADES

of High Carbon Tool Steel, accurately tempered to give you maximum use.

HANDLES

of Sound, Clear Hard Wood with Protective Flexible Lacquer Coating.

FERRULES

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"Serving the Ice Industry Since 1916" *"There is no Substitute for* MARTOCELLO QUALITY"

Vending Station Concern Opens Plant

THE Towal Manufacturing Co. Inc., Mt. Vernon, Ill. has leased space in the former Illinois Ordnance plant at Ordill, to be used for production of refrigerated automatic ice vending stations. The company has signed a lease for 10,000 sq. ft. of floor space and has installed machines and equipment, ready to begin operations. The ice stations are made in various sizes from 8x9x17 ft., to 8x9x26 ft. The production will be on an assembly line basis. The company is headed by Robert E. Towal, president, Mt. Vernon.

Although the present company was not incorporated until August 18, 1949, the design and development of this new product began in 1947, under the direction of Mr. Towal. Beginning with a test model, constructed and put into operation in Mt. Vernon, the corporation has made many changes in its product, and has now developed to the ponit where it is being sold throughout the country.

The ice stations are made in various sizes, ranging from eight feet by nine feet by seventeen feet to eight feet by nine feet by twenty-six feet. These buildings are constructed complete in one unit, painted and ready for use. They are shipped by rail or truck to the site for use.

The production is on an assembly line basis and plans are being made to provide additional space for production.

Kramer Adds to Evaporative Condenser Line

THE addition of a 10 ton evaporative condenser to its regular line of evaporative condensing units has been announced by the Kramer Trenton Company. The company says that it can now offer to the refrigeration and air conditioning industry a complete line of evaporative condensers for small tonnages with five sizes covering 2 ton, 3 ton, 5 ton, 8 ton and 10 ton. Each of the units can be supplied in 1, 2 or 3 independent circuits, thus facilitating the use of a single evaporative condenser with 1, 2 or 3 compressors.

These evaporative condensers have a number of outstanding design developments. In order to overcome the high corrosion rate characteristic of evaporative condensers the casing and sump tank is constructed of stainless steel. The pump was developed by the Kramer engineering staff and features a direct drive with no bearings, thus eliminating belts, packing and greasing. By placing the direct connected fan on the air intake side the fan remains dry and reduces corrosion. The units can be furnished for Freon, methyl or ammonia. The mounting design permits mounting as ceiling, floor or, if necessary, on side wall. Units can be used either indoor or outdoor.

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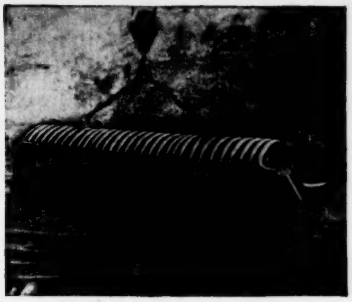
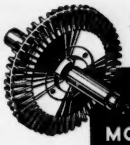


UNBEATABLE PERFORMANCE

LOW VOLUME HIGH HEADS



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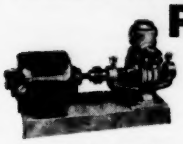
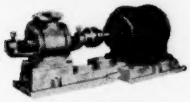
"1001" uses in INDUSTRY

APCO TURBINE-TYPE PUMPS



APCO SINGLE STAGE



APCO TWO STAGE

These, the simplest of all pumps, are of the multivane, double-suction, hydraulically balanced turbine-type and unsurpassed for long-lived service on low capacity, high head duties. Ideal for a wide variety of duties in industry. Embody an impressive array of valuable characteristics found only in this highest development of the Turbine-Type Pump. Available, too, are Water-Jacketed Apcos for hot liquids and Stainless Steel (in stock) Apcos for corrosive liquids.

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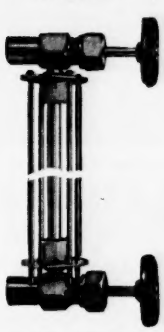
Provide maximum service under toughest operating conditions.



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Compact—Machined from bar stock steel—Full size ports — Completely rust-proofed — Highest grade graphited composition packing. All popular sizes.

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Sturdy, durable, all-steel construction with dumper support of cast iron. Available in a wide range of sizes... prompt delivery.

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DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*

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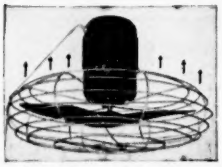
Freezer Storage—70 Ft. x 90 Ft. x 11 Ft. High
One of 4 floors similarly equipped with DIMCO coils.
The Terminal Cold Storage & Ice Co., Dayton, Ohio

THE FAN THAT BLOWS *upwards*

Reco



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Prevents Flavor Transference
Keeps Walls and Ceilings Dry
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- Instantly Adjustable Grate
- Diamond Point Picks
- Easy Starting Briggs & Stratton Engine.

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A Book Written for the Engineer

The author, a man well versed in the construction and operation of ice making and refrigerating systems, has intended this work as a practical help to the engineer in his every day problems.

PRACTICAL REFRIGERATING ENGINEERS' POCKETBOOK
By John E. Starr

eliminates algebraic terms and tells the engineer in a simple manner how to determine if his plant is operating at the highest efficiency.
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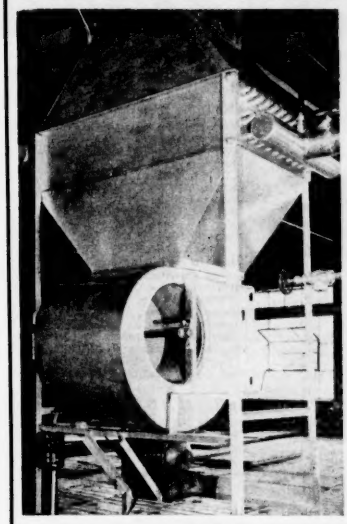
7-TON INCREASE IN TONNAGE— WITH POWER DECREASE OF 27%



It's Done Every Day with a **REX SUPER HEAT EXTRACTOR**

Here is what one user says—

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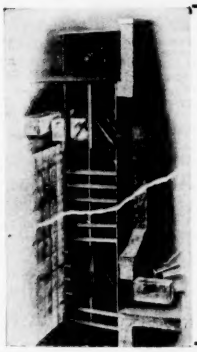

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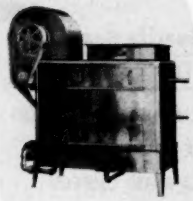

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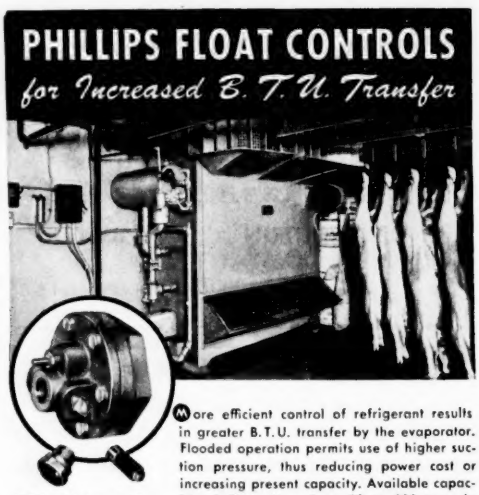

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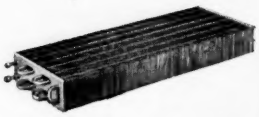

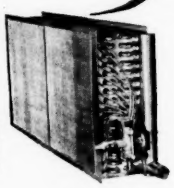

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Ice Plant Equipment Co., Inc., Philadelphia, Pa.

ICE TOOLS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc. Phiadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
The Lilly Co., Memphis, Tenn.
Martocello & Co., Jos. A., Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE VENDORS
Dickinson & Co., F. B. Des Moines, Ia.
Frick Company, Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Phiadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.
S & S Vending Machine Co., San Jose, Calif.
Towal Mfg. Co. Inc., Mount Vernon, Ill.
United Ice & Oil Supply Co., Boston, Mass.

ICED DISPLAY CASES
(See Display Cases)

INSTANTANEOUS HEATERS
National Pipe Bending Co., New Haven, Conn.

BUYERS DIRECTORY CONTINUED— NEXT PAGE

WEATHERPROOFED ICE SIGNAL CARDS

Coated Both Sides With Paraffine

ANY COLOR

ANY SIZE

We Make Any Design of Ice Signal Card

Send In Your Individually Designed Cards for Quotation

Write for Ice Signal Card Circular and Prices

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LaPorte, Indiana

PENGUIN AUTOMATIC ICE VENDING STATIONS

are engineered for economical operation in the hottest climates. Rigid board-form insulation, 1½ H.P. compressor, double gasketed doors, and double doored delivery chutes combine to seal out hot air. Ventilated, peaked roof repels sun's rays.

Write for Descriptive Literature and Prices

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MT. VERNON ILLINOIS, U.S.A.

QUALITY COILS FOR *ALL* APPLICATIONS

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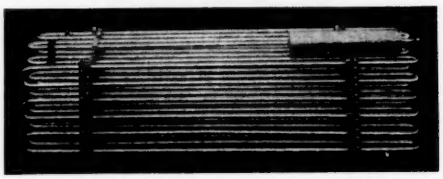
Whether your next job be for a single bend, or coil or complete piping system, Chicago Nipple can supply your requirements. Experienced workmen, practical engineers, and modern equipment reflect the quality of our products.



Coils are of selected ammonia pipe—all joints are electrically welded—checked under water with an air pressure of 300 pounds to guarantee tightness.

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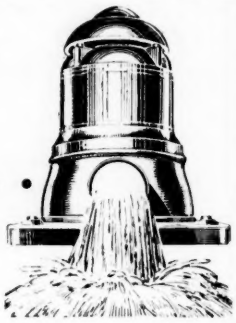
Longer Life



Layne well water systems are designed and built to produce much greater volumes of water than can be obtained from the conventional type of installation. Skillful designing and precision manufacture of the Layne Vertical Turbine pump used in these systems give extra high efficiency. The results are: more water—less cost and longer life for the unit. Furthermore, Layne well water systems are so ruggedly built that upkeep cost is almost nothing.

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General Offices
Memphis 8, Tenn.

LAYNE

WELL WATER SYSTEMS

THE BUYERS

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INSULATING MATERIALS
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Mundet Cork Corp., Brooklyn, N. Y.
Pacific Lumber Co., San Francisco, Calif.

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(See Ice Making and Refrigerating Machinery)

MASKS, AMMONIA
Acme Protection Equipment Co. Chicago, Illinois

MATERIALS HANDLING EQUIPMENT
Ohio Galvanizing & Mfg. Co., Niles, Ohio
The Moto-Truc Co., Cleveland, Ohio

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Frick Company, Waynesboro, Pa.
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

OILS, CUTTING
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

OIL SEPARATORS
King-Zeero Company, Chicago, Ill.
Rex Engineering & Sales Co. Oklahoma City, Okla.

OILS, FUEL
Socony-Vacuum Oil Co., Inc., New York, N. Y.
Sun Oil Co., Philadelphia, Pa.
Texas Co., The, New York, N. Y.

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Vivian Mfg. Co., St. Louis, Mo.
York Corp., York, Pa.

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Chicago Nipple Mfg. Co., Chicago, Ill.
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Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Pittsburgh Pipe Coil & Bending Co., Pittsburgh, Pa.
Rempe Company, Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

PIPE COVERING
(See Coverings, Pipe and Boiler)

PIPE WELDING
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National Pipe Bending Co., New Haven, Conn.
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Deming Co., The, Salem, O.
Frick Company, Waynesboro, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.
Vogt Machine Co., Henry, Louisville, Ky.
York Corp., York, Pa.

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Layne & Bowler, Inc., Memphis, Tenn.

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Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.

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Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

VALVES AND FITTINGS
Aircraft Production Engineers, Chicago, Ill.
Alco Valve Co., St. Louis, Mo.
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Vogt Machine Co., Henry, Louisville, Ky.

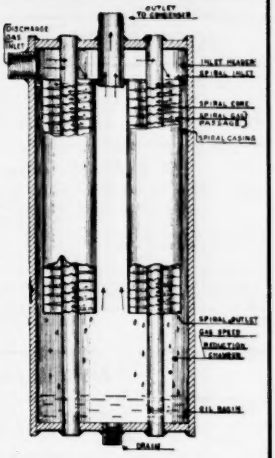
WELL SCREENS
Layne & Bowler, Inc., Memphis, Tenn.

WROUGHT IRON PIPE
Byers Co., A. M., Pittsburgh, Pa.

"King Zeero"

OIL SEPARATOR

STOPS OIL FROM ENTERING CONDENSER RECEIVER AND LOW SIDE



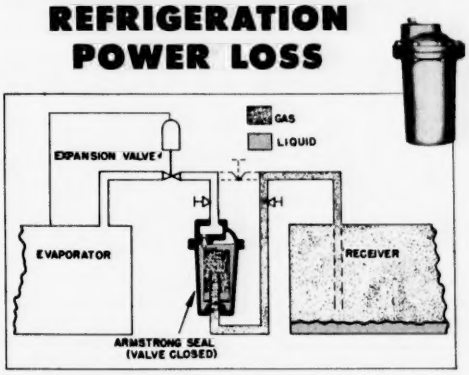
Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.

Built for years of trouble free service. Mechanical details on request.

THE KING ZEERO COMPANY
1447-55 Montrose Ave., Chicago 13, Ill.

HERE'S A WAY TO CUT A COMMON SOURCE OF REFRIGERATION POWER LOSS



FAILURE to maintain an adequate liquid seal in the refrigeration receiver permits high pressure gas to blow through to the evaporator. The power used to compress this gas is totally wasted.

An Armstrong inverted bucket refrigerant trap will prevent this loss. It automatically closes against gas, permits the flow of liquid only. Prices and details on request.

Send for Bulletin

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860 Maple Street, Three Rivers, Michigan

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All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for the purchase and sale of USED equipment, existing and used plants, and surplus material.

POSITIONS AND HELP WANTED

WANTED—Successful ice pick representative or jobber desiring exclusive territory with leading ice pick manufacturer. Recommend immediate reply; openings made possible through new sales program. Write Apex Products, 48 West 22nd St., New York City 10, N. Y.

ICE PLANTS—*Wanted and For Sale*

FOR SALE—ONE HORIZONTAL MOTOR DRIVEN 20 TON VILTER PLANT

238—400 lb. cans, 11½" x 22½" x 57." Entire plant installed new in 1921. S. L. Young & Sons, 405 N. Franklin, Austin, Minnesota.

FOR SALE—25 ton ice plant; deep well supplies all water needed. 3 tanks, 300# ice cans; 3 compressors, one 9x9 Baker, one 7½x7½ York high speed, one Armstrong. Everything in good condition. Building and three lots in excellent location. $25,000.00 with half down and balance on easy terms. Price includes stock in ice delivery company. South Tacoma Ice Co., 4528 S. Union St., Tacoma, Washington.

MISCELLANEOUS

ICE STRINGS AT A SAVING

We offer you manila rope suitable for making extra strong ice strings at 15 cents per pound. One pound of rope will make approximately 60 strings with each string 5 feet long. Cut to the lengths you desire. Samples on request. M. A. Norden Co., 607 St. Michael St., Mobile 10, Ala.

USED MACHINERY—*Wanted and For Sale*

FOR SALE—Write us for information on ice making and refrigeration equipment, compressors, motors, Diesel engines, coils, etc. Parke Pettegrew & Son Company, 370 West Broad St., Columbus 8, Ohio.

FOR SALE—One Fairbanks-Morse Diesel engine, 80 h.p., new cylinders and new pistons; price $2250.00. Regan Company, 1751 Old Shell Road, Mobile 17, Ala.

FOR SALE—2 brine coolers 41" diameter x 12' long with 160—2" tubes. Dasco, 1307 St. Clair Ave., Cleveland 14, Ohio, Phone Ma. 6729.

FOR SALE—176—11½" x 22" x 48" ice cans; A-1 condition. Subject to prior sale. Price $5.00 each, f.o.b. Gainesville, Texas. Gainesville Ice Co., Gainesville, Texas.

FOR SALE

One No. 3 Victor ice breaker, 5 h.p., 3 phase, 220 volt motor; clean, good operating condition. Contact North American Creameries, Inc., 320 Metropolitan Life Building, Minneapolis, Minn.

FOR SALE—9x9 Frick compressor, high speed, about 10 years old but not used for the past 6 years; fair condition. Settling an estate. Price for quick sale $850.00 F.O.B. Dallas. R. P. Jones, 3710 Commerce St., Dallas 1, Texas.

FOR SALE—Sterling ammonia compressor 6x6 Fairbanks-Morse S.D. Oil engine 25 h.p., Westinghouse motor 25 h.p., electric D.C. generator, can hoist and carrier, line shaftings, pulleys, assorted belts, etc. Price very low. Must vacate. Sohns, 4th & Market, Hermann, Missouri.

FOR SALE—York 9x9, 6½x6½, 4x4; Frick 7x7, 5x5, 4x4; Vilter 7½x7½; Arctic 10x10. Ammonia fittings and valves; surge drums; shell and tube condensers; receivers; 400 lb. ice cans. Write us your requirements. Gordon Equipment Co., 6530 W. Jefferson Ave., Detroit 17, Michigan.

FOR SALE—2 Baker 10½"x10½" ammonia compressors complete. 1—200 h.p., 440 volt, synchronous motor fitted for the above compressors. This equipment is new, in the original crates and is attractively priced if you have use for it. Frank B. Gohr, 3604 W. 59th St., Chicago 29, Ill.

USED MACHINERY—*Wanted and For Sale—Cont.*

FOR SALE—250 cans 11½"x22½"x45" used on season, like new, $7.00 each. Uline scoring machine $800.00. 1—3 h.p. blower $150.00. 2—2 h.p. agitators $125.00 each. 1—3 h.p. agitator $150.00. Shell & tube cooler 16', float valve, accumulator, lids, many used valves and fittings. The Home City Ice Company, Cincinnati 33, Ohio.

FOR SALE

1—International filter, F9458, style D.W. 20, right size for 20 ton plant.
1—Frick 3 h.p. vertical agitator for 20 ton freezing tank, in first class running condition.
1—Frick accumulator, complete with float and all valves for 20 ton freezing tank.
1—25 KVA Fairbanks-Morse generator complete with exciter, 3 ph. 60 cycle 220 v.
1—12 h.p. Lister Blackstone generating unit V belted to 9 KVA alternator, 3 phase, 60 cyl., 220 volt direct connected exciter.
1—6 h.p. Witte Diesel engine in first class running condition.
1—5 KW. generator with direct connected exciter, 3 phase, 60 cyl. 220 volt.
1—42" diameter, 7" face, 5" bore, steel split pulley.
1—30" diameter, 20" face, paper pulley, with 3½" bore.
1—Cast iron pulley, 45" dia. 10½" face, 5" bore.
3—Adjustable pillow block chain oiler bearings bored for 3½" shaft (Cooper-Bessemer).

SUBURBAN ICE COMPANY
P. O. Box 366 Vicksburg, Miss.

FOR SALE—One 4x4 twin York and two 3x3 twin Frick self-contained units. 4x4, 5x5, 6x6, 7½x7½, 8x8 and 9x9 York compressors, splash lubrication. One 20 and one 40 ton Vogt horizontal shell and tube condensers. Two 10 h.p. Frick Freon condensing units. One 2 h.p. vertical agitator. Write E. Niebling, 1318 St. Clair Ave., Mt. Healthy, Cincinnati 31, Ohio.

FOR SALE—One 6¾"x5" V/W York ammonia booster compressor 8 cylinder V-belt drive complete with base, including 440 volt A.C. motor and 36"x12' long D.E. gas and liquor cooler, plus valves. This equipment is new and has never been installed. If interested contact W. A. Moore, General Manager, New Orleans Cold Storage & Warehouse Co. Ltd., 305 Gaiennie St., New Orleans, La.

FOR SALE—100 h.p. Y Fairbanks Morse Diesel engine, clutch lineshaft and pulleys, $500.00. 1—Y-15 9"x9" York compressor, 1—Y-15 7½"x7½" compressor, V-belts and new bearings, each $400.00. 1—25 h.p. and 1—30 h.p. motor 220/440/3/60; 4 stands double pipe York condensers; new 3/16" 18'x 18'x4' freezing tank, never been used; 1 tank ¼"x30'x16'x4' with coils; 1 Martocello air systems, new tubes; 250 cans 11½"x22½"x44" at $1.00 each; 4,000 ft. 1¼" ammonia coils; miscellaneous ammonia valves, fittings, pumps, etc. Winfield Ice Plant, Winfield, Iowa.

FOR SALE – ICE PLANTS & EQUIPMENT

Frick 1040 Can Tank 10-can grids complete low side. Excellent condition.
1—30 Ton York Ice plant electric driven, herringbone coils, late type.
1—10"x10" York two cylinder ammonia compressor
1—6"x6" two cylinder Voss high speed ammonia compressor
2—4"x4" two cylinder York high speed ammonia compressor.
1—3"x3" two cylinder Frick unit, high speed.
Shell and Tube vertical condenser—36"x14'—162 two inch tubes.
2—16" dia. x 10'-0" long 6-pass enclosed type ammonia condenser.
1—25" dia. x 10'-0" long 5-pass enclosed type ammonia condenser.
Assorted sizes electric hoists ranging from 2 to 6 ton capacity.
Ice Conveyer drag chain, approx. 150' motor driven.
1—Gifford Wood Uline Scoring Machine Series No. 3.
2—Shell and tube submerged type brine coolers—36"x12'—143—2" tubes.
1000—11"x22"x51" Ice Cans.
600—11"x22"x48" ice cans.
Brine coolers, double pipe 2" and 2" horizontal brine coolers, submerged shell and tube type. 1¼" and 2" ammonia coils approximately 10,000 feet.
Send us your requirements on any equipment you may need.

ENTERPRISE EQUIPMENT CORPORATION
Phone: Yonkers 8-8118-9
77-79 Alexander St., Yonkers, N. Y.

USE a Classified Ad

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- *to sell Used Equipment*
- *to secure Help*
- *to find a Job*

REFER to the classified ads on this page. You may find need for some of the services advertised. Use these columns, too,—in advertising for the services or equipment you need in your business. It's a time saver . . . and produces results. Copy should reach publication office not later than 15th of month to insure insertion in current issue.

Rates: **$3.50 for 50 words or less; 60c for each additional 10 words or fraction thereof; 75c per line for bold face headings; $9.00 per inch for ads all set in bold face type or listing items on separate lines.**

Results High-Rates Low

USED ICE MACHINES AND EQUIPMENT

All Used Equipment Is Reconditioned in Our Modern Machine Shop

THIS IS ONLY A PARTIAL LIST—WRITE ABOUT ANY REQUIREMENTS WHICH YOU HAVE WE ARE BUYING ADDITIONAL EQUIPMENT ALL OF THE TIME.

Compressors With or Without Motors

Item No.

1—4x4 York, 300 RPM 16
6—6x6 York's, 200 RPM 20
1—6x6 Frick, 257 RPM 21
2—6½x6½ Arctics, 350 RPM, forced feed lub. 30
1—7¼x7¼ Baker, 350 RPM, forced feed lubrication 35
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Diesel Driven and Diesel Engines

1—8x8 York—Direct connected to 50 H.P. Fairbanks-Morse at 257 R.P.M. 210
1—175 H.P. Fairbanks-Morse Diesel engine 211
1—150 H.P. Van Severin—300 R.P.M.—Diesel engine 212

Steam Driven

1—7½x7½ Vertical York, 200 R.P.M. direct connected to steam engine 326
1—8x8 Vertical York, 300 R.P.M. direct connected 327

Item No.

Complete Ice Plants

1—15-ton electric driven plant 630
1—600 Can Trunk Coil Type—York Plant, Brand New Tank. *Complete with 10 Can Grids. This plant is equal to new* 631
Brand New 8 to 10-ton Clear Ice-Making Plants—110 Cans—Electric or Diesel Drive—2 Can Pull 632
2—247 Can, 22-ton ice plants, like new 632A
1—35-38 ton New Clear Ice Making Plants 635

Self-Contained Units

3—4x4 York & Fricks 742
1—5x5 York—390 R.P.M. 743
1—4½x5 Lipman—360 R.P.M. 744
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1—5x5 Frick—Forced Feed—400 R.P.M. Latest Type 758

Brine Coolers

1—34x12—96—2—Retubed 801
1—34x10—100—2 802
1—48"x16'—130—2" tubes 808

Condensers

3—100 ton shell and tube condensers retubed 919
2—Stands—Vogt Multi-tube—Each stand 6 pipes high. Each pipe 9"x18" with 7—2" tubes 920
1—125-ton, Vertical Shell & Tube, 196 2" tubes 921
1—120 ton, 216—2" retubed Vertical Shell & Tube 922
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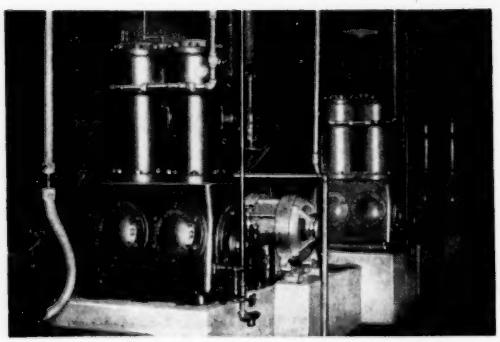

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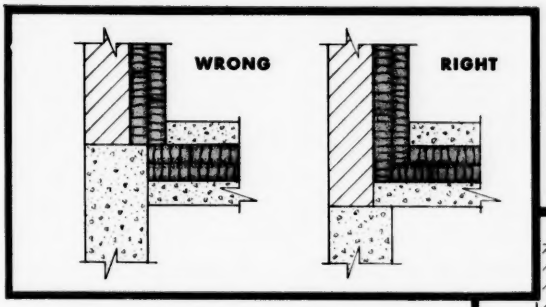
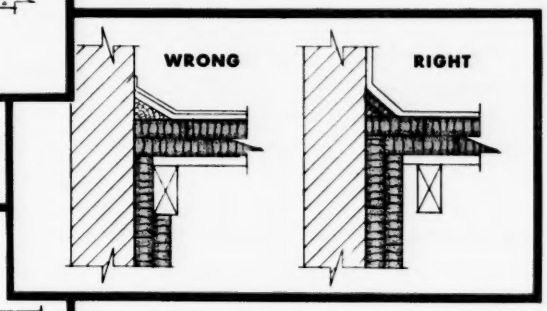
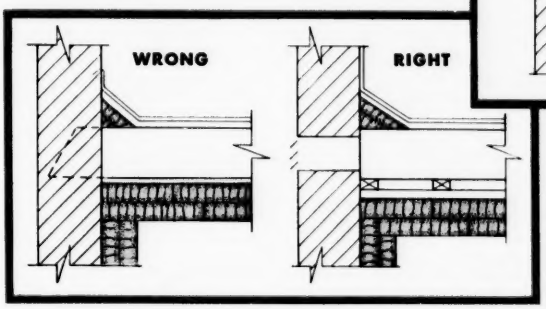


Foundation wall should be poured short to allow for full insulation thickness where the floor and wall meet.



The first ceiling joist, or the concrete floor slab, should be spaced far enough short of the building wall to allow room for full insulation thickness on the wall.



Louvers in building wall and stringers between joists and the sheathing to which insulation is applied allow for free air circulation, prevent condensation.

How to improve cold room construction

Many common construction practices are unsatisfactory for insulated buildings. The sketches above show how slight changes from normal design, made while plans are still on the drawing board, can improve the performance of insulated construction.

These alterations cost little or nothing when made at the planning stage. After building starts, any change is costly. But going ahead with construction that omits provisions for good insulation practice will result in loss of insulating efficiency and possible failure of the job.

In designing any insulated building, two important facts must be remembered. First, space must be allowed for full insulation thickness at all points. Second, ways must be found to prevent damaging moisture and frost collection. Whether or not these factors are taken into consideration can mean the difference between good or poor performance from low-temperature construction.

In addition to those shown here, there are many other places where careful planning will improve the performance of low-temperature construction. Armstrong engineers are familiar with those places. They will be glad to make recommendations, without obligation, while your plans are on the drawing board. Their advice can save you time, trouble, and money.

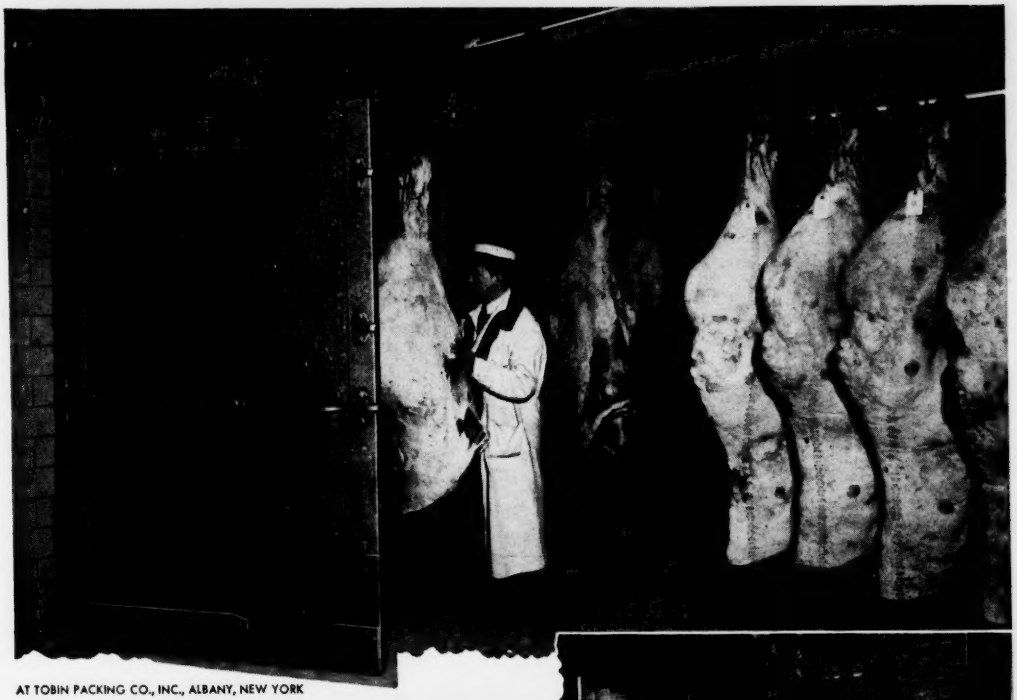
In addition to this skilled engineering advice, Armstrong's Contract Service offers you a complete line of top-quality insulation materials for all temperatures and trained mechanics to apply them. For full details, call the Armstrong office nearest you or write today to Armstrong Cork Company, 4503 Concord Street, Lancaster, Pennsylvania.

ARMSTRONG'S INDUSTRIAL INSULATIONS

MATERIALS INSTALLATION

FOR ALL TEMPERATURES FROM 300° F. BELOW ZERO TO 2800° F.

JAMISON DOORS *at work for a meat packer*



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**TRACK DOORS SPEED HANDLING—
SAVE REFRIGERATION**

Fast movement of material in and out of the refrigerated space by monorail is possible with Jamison Track Doors which permit free passage of the trolley. The Jamison freezer doors illustrated are not only metal clad but they have an additional metal kick plate on the bottom to protect against possible battering from trucks. An unusual feature of this installation is the all-steel frame in which the door is hung. The three E-Z-Open Fasteners assure uniform gasket compression for a good seal all around.

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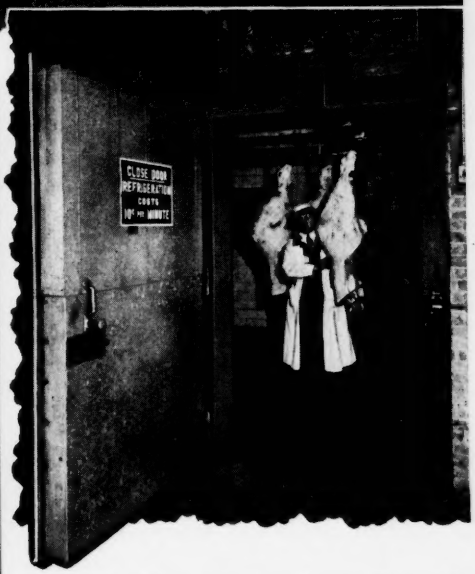
HAGERSTOWN, MARYLAND, U. S. A.

The oldest and largest builder of cold storage doors in the world



The standard line of Jamison doors will meet the majority of user requirements for temperatures, dimensions, applications.

For detailed information on these and other Jamison Cold Storage Doors, request Catalog 175.

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